



Doctorate in Clinical Psychology

The role of coping motives and self-compassion in the relationship between maladaptive perfectionism and alcohol use

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June 2017

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Submitted in partial fulfilment of the requirements for the degree of
Doctorate in Clinical Psychology at the University of Liverpool

Acknowledgements

I would like to thank my supervisors, Paul and Joanne for their amazing support and guidance from the start to the end of this process. For the time they put into meeting with me, talking me through research stresses, reading my work and providing feedback, all with great patience and encouragement. Also thank you to Susan Mitzman for her expertise in the area of perfectionism and for helping me develop some of my ideas. Thanks to all those people who helped me share my study online and to those who took the time to take part.

I had quite a few cheerleaders (mostly past trainees) who have kept me going throughout this process, I would have struggled without this encouragement and it was greatly appreciated. I am lucky to have such supporting friends and family. Also very importantly thanks to my Mum and Mairead who provided lots of love and entertainment to Oisín while I was working. Finally thanks to my little family Ryan and Oisín. It's been a long and winding road but we made it. Couldn't have done it without you.

Word Count

Total word count including appendices (excluding references): 24, 980

Thesis Final amended 121017 word count - Word

Word Count

Statistics:

Pages	106
Words	24,980
Characters (no spaces)	142,256
Characters (with spaces)	168,212
Paragraphs	1,870
Lines	4,665

☒ Include textboxes, footnotes and endnotes

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strategies and how they can precipitate and perpetuate mental health difficulties.

PERFECTIONISM AND SUBSTANCE USE

Appendix A

Quality Assessment Tool for Studies with Diverse Designs and Scoring Guidance Notes

Criteria	0 = Not at all	1 = Very slightly	2 = Moderately	3 = Complete
Explicit theoretical framework	No mention at all.	Reference to broad theoretical framework.	Reference to a specific theoretical basis.	Explicit statement of theoretical framework and/or constructs applied to the research.

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Thesis Overview

Maladaptive perfectionism is a trans-diagnostic, multifaceted personality trait which has been associated with psychological distress. The focus of this thesis is the relationship between maladaptive perfectionism and substance use. Research to date investigating the relationship between maladaptive perfectionism and substance use has been equivocal. Therefore this thesis aimed to develop a better understanding of this relationship. To address this two papers are presented: a systematic literature review (Chapter 1) and a cross-sectional empirical paper (Chapter 2). The appendices section contains additional information relating to the two chapters.

The literature review identified, collated and reported previous research in the area of perfectionism and substance misuse (alcohol and drug use). A total of 10 studies were found to be relevant after reviewing the inclusion criteria. Studies were included if they were published in English, in peer reviewed journals, used a quantitative methodology, were conducted with either adult or child populations, in community or clinical settings and reported data regarding the relationship between perfectionistic traits and substance use. The review includes a summary of the conceptualisation of perfectionism, assessment measures utilised and a synopsis of the findings from the studies. The literature to date in this area was reviewed. It was identified that perfectionism was both a risk factor and a protective factor for substance use. These conflicting findings highlighted the complex nature of perfectionism and indicated that mediating factors were influencing the relationship between the two variables. As a result recommendations for future research were proposed.

Chapter 2 consists of an empirical paper. This paper drew on recommendations from the systematic review to evaluate the relationship between maladaptive perfectionism and substance use. A model was developed based on previous literature in the area and was tested using structural equation modelling. Specifically, the role of self-compassion and coping

motives on maladaptive perfectionism and alcohol use were investigated. The paper also extended previous research in this area by using both implicit and explicit measures of maladaptive perfectionism. It was hypothesised that self-compassion would mediate the relationship between maladaptive perfectionism and drinking behaviour. Online self-report questionnaires and an implicit association task were completed by 89 individuals from both community and student populations. The analysis supported previous findings that maladaptive perfectionism predicts drinking to cope and results in increased alcohol consumption. It was also identified that although higher scores of maladaptive perfectionism predicted lower self-compassion, this did not predict alcohol consumption. Exploratory analysis revealed that self-concealment plays a role in drinking behaviour in those with high maladaptive perfectionism. Taken together, this research highlights the relationship between maladaptive perfectionism and avoidant coping strategies such as drinking to cope and self-concealment on drinking behaviour. It develops our understanding of the relationship between maladaptive perfectionism and alcohol use and presents recommendations for clinicians and future research. As the empirical paper will be submitted for publication to the Journal of Experimental and Clinical Psychopharmacology, it is written up in a style required for this.

Perfectionism and substance use: A systematic review of the literature.

Chapter 1: Systematic Review

Catherine Kerr

Abstract

Perfectionism is associated with a wide variety of mental health difficulties. Several systematic reviews have explored the relationship between perfectionism and a range of psychopathologies, however, to date, there have been no systematic reviews of perfectionism and substance use. This systematic review aims to: i) investigate the association between perfectionism and substance use; and ii) establish how previous research has contextualised, operationalised and measured perfectionism. Four electronic databases (Web of Science, PSYCinfo, SCOPUS and PubMed) were searched from their inception until March 2017 using the search terms (perfect*) AND (abuse* OR misuse* OR addict* OR depend*). Studies were included if they were published in English, in peer reviewed journals, had quantitative methodology, were conducted with any population or setting and reported data regarding the relationship between perfectionism and substance use. Following de-duplication 3358 articles were screened and 10 studies were included in the final review. Overall, data indicated a relationship between perfectionism and substance use across clinical and non-clinical populations. These included perfectionism as a risk and protective factor for substance use, highlighting the need for future research to explore the impact of mediating factors on the relationship. The area is further complicated by the use of different perspectives on conceptualising and measuring perfectionism and the lack of good quality studies carried out in this area. This review identified the need for further research in the area of perfectionism and substance use, considering mediating factors such as avoidant coping styles that may influence the relationship and provide a rationale for the conflicting findings to date.

Key words (MeSH headings): Perfectionism, addiction, substance misuse, dependence, systematic review

Introduction

Early definitions of perfectionism described it as a negative trait in which the drive for high standards of the self or others exceeds what is expected of the situation, leading to emotional distress and psychopathology (Mathew, Dunning, Coats, & Whelan, 2014; Hollender, 1965). It is argued that psychological difficulties associated with perfectionism are a consequence of individuals being highly critical of their own behaviour (Stoeber & Hotham, 2013). Individuals who are perfectionistic have a tendency to base their self-worth on their ability to achieve and maintain their high standards, often resulting in fear of failure (Shafran & Mansell, 2001). The development of perfectionistic traits has been linked to critical parenting, maladaptive core schemas (e.g. disconnection and rejection), and neuroticism (Maloney, Egan, Kane, & Rees, 2014). Moreover, there is a growing body of evidence demonstrating a relationship between perfectionism and mental health difficulties such as depression, eating disorders, suicide, and anxiety disorders (O'Connor, 2007; Cheng et al., 2015; Levinson et al., 2015; Wade, O'Shea, & Shafran, 2016). Indeed Egan, Wade, and Shafran (2011) described perfectionism as trans-diagnostic as it is a risk factor for mental health difficulties as well as a maintaining factor.

Notably different methods have been employed to research the construct of perfectionism. This includes both a cognitive perspective, with measures focusing on frequency of perfectionistic thoughts and a behavioural perspective focusing on perfectionistic self-presentation (Hewitt et al., 2003). Perfectionistic self-presentation measures individuals' tendency to promote themselves in a perfectionistic manner while concealing flaws from others (Molner & Sirois, 2016). The construct of perfectionism has also been described as multi-dimensional with both adaptive (healthy) and maladaptive (unhealthy) aspects (Hamachek, 1978; Hewitt & Flett, 1991a; Slaney, Rice, Mobley, Trippi, & Ashby, 2001). Maladaptive perfectionism has been associated with negative reinforcement

including behaviour driven by striving for high standards to ensure avoidance of negative consequences, such as criticism from others, and failure (Slade & Owens, 1998). It has been demonstrated that maladaptive perfectionists experience increased guilt and shame associated with their achievements due to consistently feeling like they should and could have done better (Hamacheck, 1978; Stoeber, Harris, & Moon, 2007). As a result, it has been shown that maladaptive perfectionism can lead to increased emotional distress, is commonly associated with psychopathology and often requires intervention (Limburg, Watson, Hagger, & Egan, 2016).

Conversely, adaptive perfectionists are considered to have similarly high personal standards but are thought to experience less distress when they fail to meet these standards (Mathew et al., 2014). Adaptive perfectionists are thought to value their goals and experience pride as a result of their attainments (Hamacheck, 1978). Positive associations have also been noted among adaptive perfectionism and adjustment; positive affect; self-esteem; self-efficacy; the pursuit of positive reinforcement; and secure relationship attachments (Stuart, 2009; Stoeber, Harris, & Moon, 2007; Grzegorek, Slaney, Franze, & Rice, 2004; Rice & Mirzadeh, 2000). However it has also been argued that when individuals with more adaptive perfectionistic traits experience life stressors, they too can experience psychopathology (Benson, 2003).

Research into positive and negative aspects of perfectionism in the literature has been complicated by the use of different terminology for perfectionism. Some authors have conceptualised adaptive and maladaptive perfectionism using terms such as ‘healthy’ and ‘unhealthy’ (Parker, 1997) and ‘functional’ and ‘dysfunctional’ (Rheaume et al., 2000). In a recent meta-analysis of perfectionism and psychopathology (Limburg et al., 2016), the authors classified the two dimensions of perfectionism as ‘perfectionistic concerns’ (e.g. discrepancy, concern over mistakes, negative perfectionism) and ‘perfectionistic strivings’

(e.g. high standards, organisation, self-orientated perfectionism). Others have conceptualised perfectionism on external and internal continuums. Interpersonal (other-orientated, socially-prescribed) and intrapersonal (self-orientated) aspects of perfectionism have also been introduced (Hewitt & Flett, 1991b). Other-orientated perfectionism is defined as having unrealistic high standards for other individuals while socially-prescribed perfectionism is defined as perceiving that other people hold high expectations for the individual (Lo & Abbott, 2013; Egan et al., 2011). Socially-prescribed perfectionism has been associated with the negative aspects of perfectionism (Stoeber & Otto, 2006) and self-orientated perfectionism has been linked with more positive aspects of perfectionism, but also incorporates aspects of self-criticism (Enns & Cox, 2002). It is argued that, because of this, self-orientated perfectionism also incorporates properties of maladaptive perfectionism (Stoeber & Otto, 2006).

Individuals high in maladaptive perfectionism have been found to have a tendency towards avoidance behaviours including engaging in behaviour to prevent negative consequences (e.g. rejection, self-criticism etc.). O'Connor and O'Connor (2003) reported that perfectionism and avoidant coping predicted hopelessness and psychological distress among college students. A review of perfectionism and psychopathology (Shafran & Mansell, 2001) aimed to identify links between perfectionism and depression, eating disorders, social anxiety and phobias, obsessive-compulsive disorder, personality difficulties, somatic symptoms and physical health. Despite suggestions in the literature that perfectionists employ avoidant coping strategies including engaging in alcohol and substance use as a way of coping or avoiding perceived difficulties (e.g. Rice & Van Arsdale, 2010; O'Connor & O'Connor, 2003), a recent meta-analysis by Limburg et al. (2016) did not look at alcohol or substance use in perfectionists. Similarly Shafran and Mansell (2001) analysed the association between perfectionism and depression, anxiety disorders, obsessive-

compulsive disorder, personality disorders, eating disorders, and physical health conditions. Again this analysis failed to include studies exploring the association between perfectionism and substance and/or alcohol abuse. Taken together this demonstrates that perfectionism has been identified as being associated with a wide variety of mental health difficulties. However, despite evidence of the link between perfectionism and avoidant coping strategies, including alcohol and drug misuse, and their subsequent relationship with the development and maintenance of a range of mental health difficulties, there is a lack of systematic analysis of the relationship between perfectionism and substance misuse.

When individuals drink alcohol to increase stimulation, such as for enhancement or social reasons, the behaviour is positively reinforced as these activities are associated with positive emotions (Cooper, Frone, Russell & Mudar, 1995). Positive reinforcement via enhancement motives has been associated with increased alcohol consumption but not alcohol abuse (Cooper, Russell, Skinner, & Windle, 1992). Alternatively, the tension reduction hypothesis posits that, when individuals use alcohol as a method of coping, their drinking behaviour is reinforced as it is effective at reducing the stress they experience (i.e. negative reinforcement; Sher, 1987; Conger, 1956). This pattern of alcohol consumption can subsequently result in more alcohol-related problems (e.g. Thomas, Merrill, von Hofe, & Magid, 2014). Therefore both positive and negative reinforcement can increase alcohol consumption but only negative reinforcement is associated with alcohol-related problems.

Rice and Van Arsdale (2010) found that individuals high in maladaptive perfectionism report significantly higher levels of drinking to cope when under stress compared to adaptive perfectionists and non-perfectionists. Indicating that maladaptive perfectionists may be employing alcohol use as a method of coping. Notably, it has been demonstrated that alcohol dependent individuals who have attempted suicide are more likely to have traits of socially-prescribed perfectionism than those who have not (Hewitt, Norton,

Flett, Callander, & Cowan, 1990). Moreover, Bardone-Cone et al. (2012) also identified a relationship between socially-prescribed perfectionism, stress and problems controlling drinking when experiencing negative affect.

Critically, a model describing a possible causal relationship between perfectionism and alcohol misuse was proposed by Hewitt and Flett (1991b). They argued that maladaptive perfectionists drink alcohol to cope with feelings of inadequacy as opposed to positive reinforcement motives such as for social enjoyment or enhancement. Mohr et al. (2013) contend that coping motives predict alcohol-related problems, abuse, and over consumption, suggesting that there could be a pathway from perfectionism to problematic alcohol use (rather than more normative alcohol use). Furthermore, no relationship was found by Flett et al. (2008) among college students between socially-prescribed or other-orientated perfectionism and binge drinking but self-orientated perfectionism was identified as a protective factor against binge drinking. This suggests that the relationship between alcohol use and drinking behaviours varies based on the type of perfectionistic tendencies as well as mediating factors such as drinking motives or negative affect.

Review Objectives

Previous literature reviews have explored the association between perfectionism and a range of different mental health difficulties. However, none have captured the literature base for the relationship between perfectionism and substance use. The current literature review therefore will systematically review past research to identify if previous publications have identified a relationship between perfectionism and substance use. In addition to this, because of different approaches to conceptualising perfectionism and subsequently measuring perfectionism, a summary of how previous studies have conceptualised and measured perfectionism will be provided. Although drawing on theory from other areas of

perfectionism research, this review will focus on the construct of perfectionism as multi-dimensional with both adaptive (healthy) and maladaptive (unhealthy) aspects.

Method

The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA; Liberati et al., 2009) statement and checklist were used as a guide for writing this review.

Search Strategy

Informed by several scoping searches, four electronic databases (Scopus, PSYCinfo, Web of Science and Pubmed) were searched for relevant studies from their inception up until March 2017 using the search terms (perfect*) AND (abuse* OR misuse* OR addict* OR depend*). Appropriate subject headings were used for each database so as to increase the specificity of searches. Database email notifications were set up to alert the researcher of any new publications with the search terms. Where possible authors were contacted to request additional data, information or translations. Four authors were contacted, one responded with additional literature and another stating that they no longer had access to the data. Electronic searches were supplemented with manual searches of the reference lists of relevant studies and of key texts in the area.

Web of Science subject area restrictors were ‘psychology, ‘social sciences’, mathematical methods, ‘psychiatry’, ‘clinical psychology’, ‘multidisciplinary psychology’ and ‘experimental psychology’. Scopus subject areas were restricted to ‘social sciences’, and ‘psychology’. All databases included restrictors ‘human species not other animals’ and ‘English language only’.

Screening and Selection

Duplicate titles were removed and the remaining titles were scanned for relevance. The selected journal articles abstracts and titles were then screened for key words (e.g. perfectionism and substance use) and those identified were then screened for relevance

against the eligibility criteria. The selected journal articles were then read in full by the primary author to see if they were appropriate for inclusion in the review based on the eligibility criteria. Queried journals were discussed with a second reviewer and if a consensus could not be reached a third reviewer was consulted.

Eligibility Criteria

Initial scoping searches of the literature base of perfectionism and alcohol misuse and/or substance use identified few relevant papers. Studies were included if they:

- were published in English, in peer reviewed journals
- had quantitative methodology
- were conducted with any population or setting
- reported data regarding the relationship between perfectionistic traits (including maladaptive/neurotic/unhealthy/socially orientated/self-orientated or other-orientated) and substance misuse (including alcohol and drug use)
- were empirical studies
- used human participants and not animals.

Studies were excluded if they:

- included only addiction to prescription medication, cigarettes or related to eating disorder (e.g. laxatives)
- were unpublished (due to risk of methodological flaws or bias).

Data Extraction

Relevant data was extracted by the primary author. In the case of missing or unclear data, authors were contacted to attempt to source data sets or additional information. A data extraction form was reviewed and discussed with the research team. It was not possible to carry out separate independent data extraction but any queries were discussed with the research team.

Quality Assessment

A quality assessment of the studies selected for review was carried out using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh, Lawton, Gardner, & Armitage, 2011) by two independent reviewers (CK & MGC). The QATSDD was an appropriate tool for this systematic review as it has been found to have good reliability and validity for use in the quality assessment of studies with diverse designs (Sirriyeh et al. 2011). It includes 16 criteria which are each rated with a scale response between 0 and 3. A scoping search for the review identified studies with a range of designs. The author conducted an independent quality assessment and this was cross checked by the second reviewer (MCG). Discrepancies were discussed to reach an agreement as recommended by Sirriyeh et al. (2011). Studies were not excluded from the review on the basis of quality assessment scores due to the limited availability of literature in this area. However, the findings were useful to provide information about the quality of research carried out in this topic to date (Sirriyeh et al., 2011).

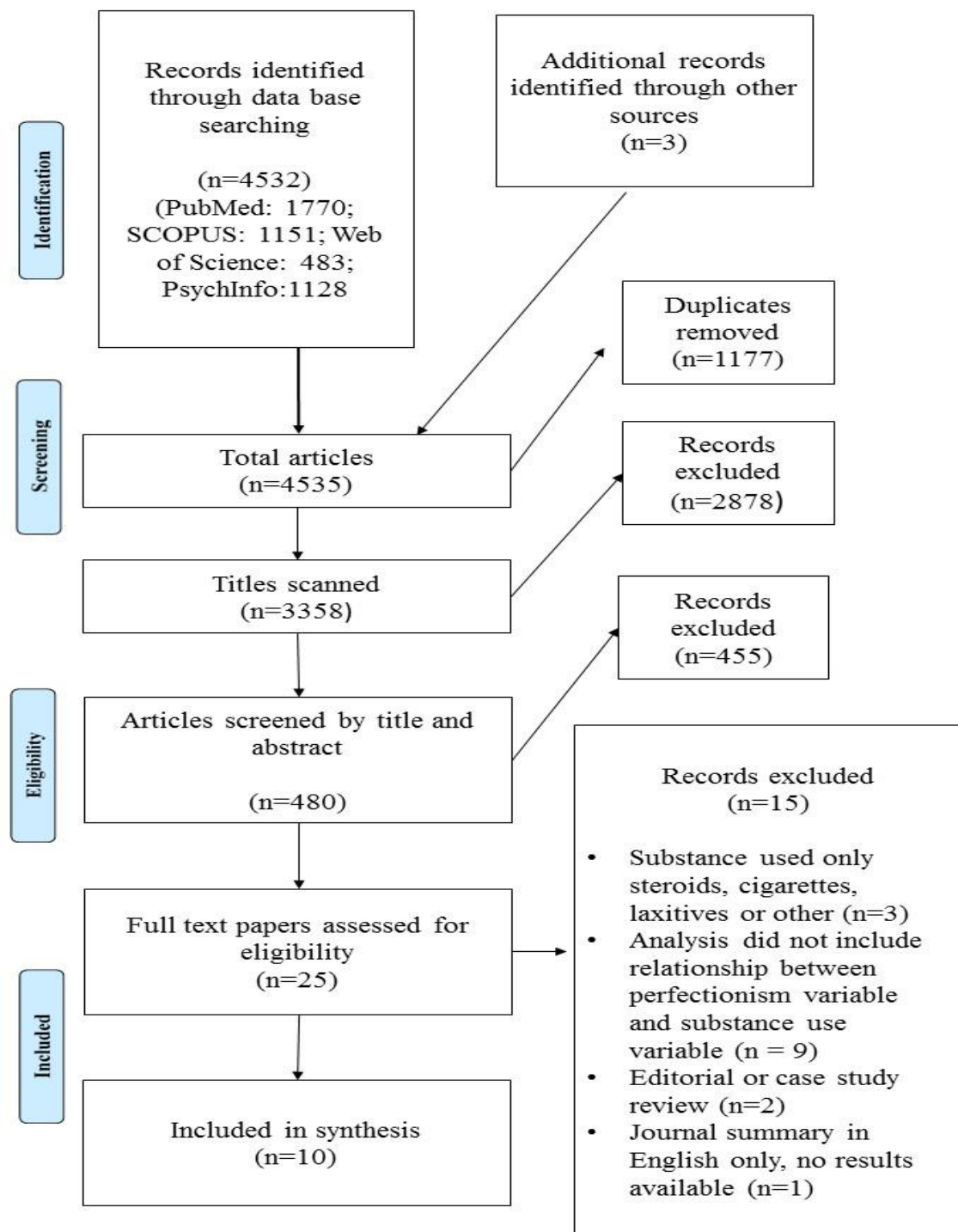


Figure 1. Flow chart for searches and study selection

Results

The electronic search identified 4532 journal articles. A total of 1177 duplicate studies were removed and after screening titles a further 2878 papers were removed. Titles and abstracts from the remaining 480 journals were screened identifying 25 publications for full text review. From these nine journal articles were identified as relevant for inclusion in the systematic review. One additional paper was sourced via searching reference lists of selected studies. No additional articles were identified via reference lists of previously published systematic reviews on perfectionism (e.g. Limburg et al., 2016). The process of selecting relevant articles is shown in Figure 1.

As shown in Figure 1, the reasons journal articles were excluded from the review at this stage included abuse of only substances such as cigarettes or related to eating disorder (e.g. laxative use) rather than non-prescription drugs or alcohol, no details of results available in English language, editorial or case study style paper, or no results of relationship between substance use and perfectionism. Full study characteristics and quality assessment scores (full details of the quality assessment can be found in Table 1) of the studies selected for the review are shown in Table 2. As a wide range of measures and definitions of perfectionism and substance use were employed across the studies, aggregation of effect sizes would be limited by high heterogeneity and low precision and as a result a meta-analysis was not used here (Blundell, 2014). The results were synthesised narratively as it was decided this would capture the overall findings and outcomes of each study.

Characteristics of included studies

All studies identified were quantitative studies with cohort ($\kappa = 2$) and cross-sectional ($\kappa = 8$) designs. Two studies were conducted in Canada (Flett et al., 2008; Hewitt & Flett, 1991b) while the others were all carried out in the US. The studies were carried out over a 20 year period, the earliest in 1991 and the most recent in 2012. The 10 studies included a total

of 2758 participants. It is not possible to report the demographic information for the overall review as one study (Pritchard, Gregory, Wilson, & Yamnitz, 2007) did not provide final figures for the overall sample. Of those studies that reported mean age, this ranged from 11.8 to 35.9 years old. Mainly participants were university students. There was also a group of sixth and seventh grade (11-14 year old) middle school students (Luthar & Becker, 2002). Two of the studies participants were females (adolescents and adults) being treated for eating disorders (Wiederman & Pryor, 1997; Bulik et al., 2004) and one included adult inpatients and outpatients from a psychiatric hospital (Hewitt & Flett, 1991b). All studies investigated alcohol use except one which measured self-reported drug use (Graff Low & Gendaszek, 2002), one which measured alcohol and drug abuse (Hewitt & Flett, 1991b), and two which measured a combination of drugs, alcohol and nicotine (Luthar & Becker, 2002; Wiederman & Pryor, 1997).

Quality Assessment

The results of the quality assessment can be found in Table 1. As qualitative studies were not included in the review, the specific QATSDD items for qualitative studies have not been included. There was substantial variability with the overall quality of the studies. Total scores ranged from 12 (29%) to 30 (71%) out of a possible score of 42. All studies were rated as zero on two of the QATSDD criteria namely 'evidence of sample size considered' and 'evidence of user involvement in design'. Overall the studies demonstrated higher ratings (80% or above overall) for 'giving a clear description of the research setting', and 'providing appropriate data collection and analysis for the research question'. The majority of studies gave at least some reference to the overall aims and objectives of their study (80% overall) but an 'explicit reference to a theoretical framework' (43% overall) was only made by one study in detail (Sherry et al., 2012). Poor quality (below 50% overall) was identified across the studies as a whole in providing a 'representative sample of target group of a reasonable size', 'rationale

for choice of data collection' and 'good justification for analytical method selected'. Only four studies provided a detailed rationale for the selection of statistical method (47% overall). Many of the studies also failed to clearly outline the strengths of their study alongside the limitations (50% overall).

Conceptualising and measuring perfectionism

Measures of perfectionism varied within studies. The Multi-dimensional perfectionism scale (HMPS; Hewitt & Flett, 1991b), Multi-dimensional perfectionism scale (FMPS; Frost et al., 1990), Almost perfect scale-revised (APS-R; Slaney et al., 2001), a subscale of the Eating disorder inventory (EDI; Garner, Olmstead, & Polivy, 1983) and a subscale of the Dysfunctional attitude scale-form A, (DASp; Weismann & Beck, 1978) were all employed to measure perfectionistic traits.

The Multi-dimensional perfectionism scale (HMPS; Hewitt & Flett, 1991b).

The HMPS is unique in its interpersonal approach to measuring perfectionism (Stairs, Smith, Zapolski, Combs, & Settles, 2012). Of those studies that used the HMPS (Bardone-Cone et al., 2012; Flett et al., 2008; Hewitt & Flett, 1991b) two assessed all three subscales (self-orientated perfectionism, socially-prescribed perfectionism and other-orientated perfectionism) of the measure. Bardone-Cone et al. (2012) assessed only self-orientated and socially-prescribed perfectionism identifying them as adaptive and maladaptive perfectionism measures respectively. Hewitt and Flett (1991b) was a five study process to develop the HMPS and demonstrate the multidimensional aspects of perfectionism. The HMPS is a 45-item questionnaire with internal reliability ranging from $\alpha = 0.74$ to 0.88 for the subscales (Stairs et al., 2012). Internal reliability for subscales of three of the included studies (Bardone-Cone et al., 2012; Flett et al., 2008; Hewitt & Flett, 1991b) were good, (based on $\alpha = .7+$ recommended by Kline, 1999), except other-orientated perfectionism $\alpha = 0.66$ (Flett et al., 2008). The measure contains three 7-item subscales with individuals rating their level of

agreement with statements (Flett & Hewitt, 2014). Norms have been developed for the HMPS based mainly on university samples, which is the population included in two of the review studies (Hewitt & Flett, 1999b). Construct validity has also been adequately demonstrated (Hewitt & Flett, 1999b).

Multi-dimensional perfectionism scale (FMPS; Frost et al., 1990).

The FMPS (Frost et al., 1990) is a 35-item scale with six subscales and a total perfectionism score. The measure has been used in studies involving both adults and adolescents but there is a lack of normative data for a range of populations available for the measure (Flett & Hewitt, 2014). It was used by four identified studies which used it to classify perfectionism in different ways. Bulik et al. (2004) utilised all subscales and total scores while Flett et al. (2008) only included five subscales (concern over mistakes, personal standards, parental expectations, parental criticism and doubts about actions) and a total perfectionism score. The organisation subscale was excluded as they reported that it is not associated with the other factors and does not correlate with total perfectionism score.

However, Luthar and Becker (2002) conducted a factor analysis on the scale which identified two subscales: maladaptive and adaptive perfectionism. Taken together this suggests that the factor structure of the FMPS may not be stable (particularly in different populations).

Alternatively, Graff Low and Gendaszek (2002) simply employed a median split on total scores of this scale to produce high and low perfectionism categories. Although the FMPS is the most widely used perfectionism measure (Flett & Hewitt, 2014), it has been criticised for including items that reflect antecedents to perfectionism (e.g. parental criticism, parental expectations) rather than aspects of the trait (Stairs et al., 2012). However, it has been shown to have adequate convergent validity with other measures of perfectionism in both community and clinical samples (Burgess, Frost, & DiBartolo, 2016). Furthermore, internal reliability of the subscales for current studies ranged from 0.75 to 0.87 (Flett et al., 2008), and

0.62 to 0.94 (Luthar & Becker, 2002). Reliability was not reported for the sample in Graff Low and Gendaszek (2002) or Bulik et al. (2004).

Almost perfect scale-revised (APS-R; Slaney et al., 2001).

The APS-R (Slaney et al., 2001) is a three item subscale which was used by Rice and Van Arsdale (2010). Only the discrepancy and high standards subscale were used as the authors reported that the order subscale did not add any more predictive information than was already provided by the high standards subscale. Despite concerns about the independence and predictive validity of the order subscale, previous studies have found that it correlates strongly with the FMPS organisation subscale (Flett & Hewitt, 2014). In addition, a confirmatory factor analysis by Stairs et al. (2012) identified a strong correlation between the APS-R and FMPS organisation subscale. APS-R cut off scores, developed by Rice and Ashby (2007), were used to categorise responses into maladaptive and adaptive perfectionists for analysis in this study. The APS-R high standards and discrepancy subscales have demonstrated good internal reliability ($\alpha = 0.85- 0.96$), test-retest reliability ($r=0.76$ and $r = 0.82$ respectively) and predictive validity (Rice & Van Arsdale, 2010).

Eating disorder inventory (EDI; Garner, Olmstead, & Polivy, 1983).

Two studies (Pritchard et al., 2007; Wiederman & Pryor, 1997) measured perfectionism using a six item perfectionism subscale of the EDI (Garner et al., 1983). This scale requires responding to questions about level of performance on a variety of activities, including school performance, using a 6-point scale. The EDI was designed for use with individuals with suspected eating disorders (Garner et al., 1983) and was frequently used in perfectionism research prior to the development of multi-dimensional measures of perfection in the early nineties (Flett & Hewitt, 2014). No rationale is given for the use of this tool in a non-eating disorder population (Pritchard et al., 2007) when more suitable measures were available. However they did report adequate internal reliability ($\alpha=0.78$) in their sample.

Wiederman and Pryor (1997) did not assess reliability for their study population which was females with diagnosis of eating disorders. The authors of the measure have demonstrated predictive, convergent and discriminant validity of the perfectionistic traits subscale (Garner et al., 1983).

Dysfunctional attitude scale-form A, (DASp; Weismann & Beck, 1978).

Finally, the DASp (Weissman & Beck, 1978) 15-item perfectionistic attitudes subscale was used by Sherry et al. (2012). Their research focused on a ‘perfectionistic attitudes’ construct of perfectionism. Subscale items are rated on a 7-point likert scale with higher scores indicting higher levels of perfectionistic attitudes (Sherry et al., 2012). This measure has been developed based on cognitive behavioural theory and draws on cognitive distortions with perfectionistic themes and social difficulties with perfectionistic themes (Frost et al., 1990). Previous research has demonstrated good test re-test reliability ($r = 0.56$) and predictive, convergent, incremental and discriminant validity of the DAS in both clinical and university populations (Sherry, Hewitt, Flett, & Harvey, 2003).

Substance use measures

A wide variety of measures were used to assess substance use among participants which varied in reliability and validity. These included a version of the ‘negative affect’ subscale of the Eating self-efficacy scale (Glynn & Ruderman, 1986) adapted for drinking, ‘alcohol items’ of the Canadian campus survey, Frequency of drug use grid (Johnston, O’Malley, & Bachman, 1984), Structured clinical interview for DSM-IV Axis I disorders (SCID-I; First, Gibbon, Spitzer, Benjmin, Williams, 1997), Million clinical multiaxial inventory (MCMI; Million, 1983), Young adult alcohol problems screening test (YAAPST; Hurlbut & Sher, 1992), Drinking motives questionnaire (DMQ; Cooper, 1994; Cooper, Russell, Skinner, & Windle, 1992), Alcohol use disorders identification test (AUDIT; Saunders, Aasland, Babor, De la Fuente, & Grant, 1993), self-reported drug use over the last

year and researchers own data collection tool.

Four of the studies (Flett et al., 2008; Graff Low & Gendaszek, 2002; Bulik et al., 2004; Hewitt & Flett, 1991b; Wiederman & Pryor, 1997) did not report reliability and validity for substance use measures. Two reported internal consistency reliability of adequate to good for study samples and validity based on the literature (Bardone-Cone et al., 2012; Luthar & Becker, 2002). All other studies reported adequate reliability and validity based on previous research.

Table 1
Quality Assessment Ratings using QATSDD

	Bardone- Cone et al. (2012)	Bulik et al. (2004)	Flett et al. (2008)	Graff Low & Gendaszek (2002)	Hewitt, & Flett (1991b)	Luthar & Becker (2002)	Pritchard, Wilson, & Yamnitz (2007)	Rice & Van Arsdale (2010)	Sherry et al. (2012)	Wiederman & Pryor (1997)	Total domain score
Explicit theoretical framework	2	0	1	0	1	2	1	2	3	1	13/30 (43%)
Statement of aims/objectives	3	3	2	1	2	3	2	2	3	3	24/30 (80%)
Clear description of research setting	3	3	2	2	3	3	3	3	3	2	27/30 (90%)
Evidence of sample size considered	0	0	0	0	0	0	0	0	0	0	0/30 (0%)
Representative sample of target group of a reasonable size	0	3	1	1	1	2	1	2	1	2	14/30 (47%)
Description of procedure for data collection	2	1	2	1	2	3	2	3	2	2	20/30 (67%)
Rationale for choice of data collection tools	0	1	0	1	1	1	2	3	2	2	13/30 (43%)
Detailed recruitment data	2	1	0	1	2	3	3	3	1	1	16/30 (53%)
Statistical assessment of reliability and validity of measurement tool(s)	2	0	2	1	1	2	2	2	3	1	16/30 (53%)
Fit between stated research question and method of data collection	2	2	3	2	3	2	2	3	3	3	25/30 (83%)
Fit between research question and method of analysis	2	3	2	1	3	3	2	3	3	3	25/30 (83%)
Good justification for analytical method selected	1	1	1	0	0	3	0	2	3	3	14/30 (47%)
Evidence of user involvement in design	0	0	0	0	0	0	0	0	0	0	0/30 (0%)
Strengths and limitations critically discussed	2	1	1	1	1	2	2	2	2	1	15/30 (50%)
Total score	21	19	17	12	20	29	22	30	29	24	
Percentage Score	50%	45%	40%	29%	48%	69%	52%	71%	69%	57%	

Relationship between perfectionism and substance use

The studies included in the review identified equivocal findings between use of alcohol or other substances and perfectionism. Overall six (Bardone-Cone et al., 2012; Luthar & Becker, 2002; Rice & Van Arsdale, 2010; Sherry et al., 2012; Hewitt & Flett, 1991b; Bulik et al., 2004) of the studies identified a relationship between perfectionism and substance use. Of these five were cross sectional and one was cohort design. Four studies (Flett et al., 2008; Graff Low & Gendaszek, 2002; Pritchard et al., 2007; Wiederman & Pryor, 1997) did not identify any significant findings.

Cross-sectional study findings.

Rice and Van Arsdale (2010), found a significant positive correlation between the APS discrepancy subscale, which has been associated with maladaptive aspects of perfectionism (Slaney et al., 2001), and drinking to cope, as well as alcohol-related problems. However, there was no significant relationship between APS-R high standards subscale, which has been associated with adaptive perfectionism, and drinking to cope or alcohol-related problems. In the same study maladaptive perfectionists scored significantly higher than adaptive and non-perfectionists on drinking to cope motives. This study had the highest overall quality rating (30/42). Hewitt and Flett (1991b) also found a significant positive relationship between socially-prescribed, or maladaptive perfectionism and alcohol abuse in a group of patients from a psychiatric hospital. However, contradictory to Rice and Van Arsdale (2010), they also identified a significant positive relationship with self-orientated or adaptive perfectionism and alcohol abuse. In addition to this a significant positive correlation was identified between other-orientated perfectionism and drug abuse in the same study. Other-orientated perfectionism has also been associated with maladaptive perfectionism. It is important to note that this study had one of the lowest overall quality ratings overall (20/42).

Perfectionistic attitudes were found to significantly positively correlate with hazardous drinking but not alcohol consumption in college students (Sherry et al., 2012). Furthermore, hazardous drinking was found to mediate the relationship between perfectionistic attitudes and depressive symptoms after controlling for social disconnection. Luthar and Becker (2002) identified no relationship between maladaptive perfectionism and substance use in a group of 6th grade (11-12 year old) affluent middle school children or 7th grade (12-13 year old) girls. However, a significant positive relationship was identified between maladaptive perfectionism and substance use in 7th grade males. In this study substance use was categorised as frequency of use of substances (nicotine, alcohol, marijuana, inhalants, crack, cocaine and LSD). Both these studies demonstrated similar, good quality ratings (29/42). Gender differences were also identified by Hewitt and Flett (1991b) with males demonstrating a significant positive correlation with self-orientated perfectionism and both drug and alcohol abuse. While in the same study females who scored highly on socially-prescribed perfectionism were significantly more likely to abuse alcohol. This indicates that males and females may use different strategies to cope with different aspects of perfectionism.

Bulik et al. (2004) assessed individuals with eating disorders and found that those with co-morbid alcohol use disorders scored significantly higher on FMPS total perfectionism than those without alcohol use disorders. In another study involving participants with eating disorders, Wiederman and Pryor (1997) identified no significant relationship between perfectionism and number of reported substances (including drugs, alcohol and nicotine). The results indicate that some categorisations of perfectionism may be protective against drinking behaviour. For example, it was identified that individuals who self-reported as non-binge drinkers scored significantly higher on self-orientated perfectionism than binge drinkers (Flett et al., 2008). Rice and Van Arsdale (2010) also found

that adaptive perfectionists scored significantly lower than maladaptive perfectionists on a measure of alcohol-related problems. However some studies found no significant relationship between perfectionism and substance misuse. Specifically, Flett et al. (2008) identified no significant difference between binge drinkers and non-binge drinkers in socially-prescribed perfectionism, other-orientated perfectionism or total perfectionism. Graff Low et al. (2002) identified no significant relationship between drug use, (operationalised as self-reported use of prescription and illegal amphetamines during the last 12 months), and perfectionism in a sample of university students. However in the same study it is notable that perfectionists who also scored highly in high sensation seeking had the greatest self-reported abuse of prescription amphetamines. Notably this study had the lowest overall quality rating (12/42).

Cohort study findings.

Both of the cohort studies included in the systematic review found a significant relationship between substance use and perfectionism. Bardone-Cone et al. (2012) found a significant positive relationship between drinking in response to negative affect and socially-prescribed perfectionism. Conversely, Pritchard et al. (2007) identified a significant negative correlation between frequency of drinking and perfectionism, in line with some of the findings from the cross-sectional studies. Identifying some aspects of perfectionism may be protective. However, Pritchard et al. (2007) found no significant relationship between perfectionism and drinking to intoxication or drinking on weekends. In addition to this Bardone-Cone et al. (2012) found no significant relationship between problems controlling drinking when experiencing negative affect and self-orientated perfectionism. Bardone-Cone and Pritchard et al. quality ratings fell within the medium range (21/42 and 22/42 respectively).

Table 2**Summary of articles included in the review**

Citation/ Author (Country)	Study Design	Sample	Outcome measures	Data analytical method	Study Findings		Effect size (if reported)	Quality Rating
					Primary	Secondary		
Bardone- Cone et al. (2012) (US)	Cohort	N=426 University students Mean age: 18.60 (s.d. = 0.97)	Perfectionism: HMPS Substance Use: Eating (eating items replaced with drinking items). Self-Efficacy Scale, subscale 'negative affect' (Glynn & Ruderman, 1986).	Correlation Linear regressions simple slope analysis	Significant relationship between drinking in response to negative affect and socially-prescribed perfectionism, $p < .01$. No significant relationship between difficulty controlling drinking when experiencing negative affect and self- orientated perfectionism.	 Academic stress significantly associated with difficulty controlling drinking when experiencing negative affect at high levels of socially-prescribed perfectionism $\beta = .36$, $p < .001$, but not at low levels of socially- prescribed perfectionism, $\beta = .05$, $p = .50$. Interpersonal stress was significantly associated with difficulty controlling drinking when experiencing negative affect at high levels of socially- prescribed perfectionism, $\beta = .44$, $p < .001$, as well as at low levels of socially-prescribed perfectionism, $\beta = .15$, $p < .05$.	$r = 0.17$ (small) n/a $r = -.04$	21/42 (50%)

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Citation/ Author (Country)	Study Design	Sample	Outcome measures	Data analytical method	Study Findings		Effect size (if reported)	Quality Rating
					Primary	Secondary		
				Hierarchical multiple regression analysis		<p>Weight/shape stress was significantly associated with difficulty controlling drinking when experiencing negative affect at high levels of socially-prescribed perfectionism, $\beta = .18$, $p < .01$, but not at low levels of socially-prescribed perfectionism, $\beta = -.06$, $p = .453$.</p> <p>No significant 2-way interactions between self-orientated perfectionism and any stress domain in the prediction of controlling drinking when experiencing negative affect (academic stress, $\beta = -.05$, $p = .336$; interpersonal stress, $\beta = .01$, $p = .773$; and weight/shape stress, $\beta = -.03$, $p = .562$.</p> <p>Significant 2-way interaction between socially-prescribed perfectionism and all stress domains in the prediction of controlling drinking when experiencing negative affect (academic stress, $\beta = .16$, $p = .24$; interpersonal stress, $\beta = .15$, $p = .41$; weight/shape stress, $\beta = .12$, $p = .13$), after controlling for difficulty controlling overeating in response to response to negative affect.</p>		

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Citation/ Author (Country)	Study Design	Sample	Outcome measures	Data analytical method	Study Findings		Effect size (if reported)	Quality Rating
					Primary	Secondary		
Bulik et al. (2004) (US)	Cross- sectional	N=672 Individuals with diagnoses (DSM-IV) of anorexia nervosa, n=97; bulimia nervosa, n=282; both anorexia and bulimia nervosa, n= 293. Mean age not reported.	Perfectionism: FMPS Substance Use: Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I, First et al., 1997)	Logistic Regression	Participants with AUD scored significantly higher on FMPS total perfectionism $X^2 = 9.63$, $p=.002$ than those without AUDs.	None	OR = 1.3 (small)	19/42 (45%)
Flett et al. (2008) (Canada)	Cross- sectional	N=207 First year college students Mean age: 18.89 (s.d. = 2.08) Non-binge drinkers (n=137) Occasional binge drinkers (n=35) Episodic heavy drinkers (n=35).	Perfectionism: HMPS FMPS Substance Use: Canadian Campus Survey (Adlaf, Demers, & Gliksman, 2005).	Univariate ANOVAs <i>Pairwise</i> comparisons (Tukey's LSD)	Significant difference for self-oriented perfectionism, $p < .05$. No significant difference for socially orientated or other-orientated perfectionism Non-binge drinkers had significantly higher levels of self-oriented perfectionism relative to other groups.	None	partial η^2 = .05 (small) n/a n/a	17/42 (40%)

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Citation/ Author (Country)	Study Design	Sample	Outcome measures	Data analytical method	Study Findings		Effect size (if reported)	Quality Rating
					Primary	Secondary		
Graff Low & Gendaszek (2002) (US)	Cross- sectional	N=150 University students Mean age: 20.1 (s.d. not reported)	Perfectionism: FMPS Substance use: Self-report of drug abuse over the last year using questionnaires.	ANOVA ANOVA with sensation seeking, gender (co- variate) and drug abuse (DV)	Perfectionism was not associated with self- reported use of illicit drug use, $p = 0.92$). The two-way interaction between sensation seeking and perfectionism was significant ($p = 0.012$), with high sensation seeking perfectionists having the greatest self-reported abuse of prescription amphetaminesabuse of prescription amphetamines		n/a	13/42 (31%)
Hewitt & Flett (1991b) (Canada)	Cross- sectional	N = 79 Adult psychiatric patients from Brockville Psychiatric Hospital (Outpatients = 46, Inpatients = 31) Mean age = 35.86 (s.d. not reported)	Perfectionism: HMPS Substance Use: Million Clinical MCMI	Correlation analysis	Self-oriented perfectionism correlated significantly with alcohol abuse, $p < .01$. Socially-prescribed perfectionism correlated significantly with alcohol abuse, $p < .01$. Other-orientated perfectionism correlated significantly with drug abuse, $p < .001$. There was no significant relationship between self-orientated and socially- prescribed perfectionism and drug abuse.		$r = 0.22$ (small) $r = 0.27$ (small) $r = 0.31$ (medium) n/a $r = 0.32$ (medium)	20/42 (69%)

PERFECTIONISM AND SUBSTANCE USE

Citation/ Author (Country)	Study Design	Sample	Outcome measures	Data analytical method	Study Findings		Effect size (if reported)	Quality Rating
					Primary	Secondary		
						perfectionism and alcohol abuse, $p < .05$, and drug abuse, $p < .05$.	$r = 0.35$ (medium)	
						Females showed a significant positive correlation, $p < .01$ between socially-prescribed perfectionism and alcohol abuse.	$r = 0.47$ (medium)	
						Males showed no significant correlation with socially-prescribed perfectionism and alcohol abuse.	n/a $r = 0.08$	
Luther & Becker (2002) (US)	Cross-sectional	N= 302 6 th grade students Mean age = 11.8 (s.d. not reported) 7 th grade students Mean age =12.8 (s.d. not reported)	Perfectionism: FMPS Substance use: Frequency of drug use grid (Johnston, O'Malley, & Bachman, 1984).	Correlation	Significant relationship between maladaptive perfectionism and substance use in 7 th grade males, $p < .01$. No significant relationship between maladaptive perfectionism and substance use in 6 th graders. No significant relationship between maladaptive perfectionism and substance use in 7 th grade girls.	None	$r = 0.33$ (medium) n/a males $r = 0.06$ females $r = 0.20$ n/a $r = 0.13$	29/42 (69%)
Pritchard et al. (2007) (US)	Cohort	N = 242 First year college students Mean age: not reported.	Perfectionism: EDI Substance Use: Researcher own data collection tool to measure	Repeated Measures ANOVA Correlation	Negative significant correlation between frequency of drinking and perfectionism, $p < .05$. No significant correlation between perfectionism and drinking to intoxicated.	None	$r = 0.20$ (small) n/a $r = -0.07$	22/42 (52%)

PERFECTIONISM AND SUBSTANCE USE

Citation/ Author (Country)	Study Design	Sample	Outcome measures	Data analytical method	Study Findings		Effect size (if reported)	Quality Rating
					Primary	Secondary		
					No significant relationship between perfectionism and drinking on weekends. ($r(240) = -0.08$).		n/a $r = -0.08$	
Rice & Van Arsdale (2010) (US)	Cross- sectional	N=354 College students Mean age: 19.29 (s.d. = 1.46)	Perfectionism: APS-R Substance Use: Young adult alcohol problems screening test (Hurlbut & Sher, 1992). DMQ	Correlation	Significant positive correlation between drinking to cope and APS-discrepancy, $p < .005$ †.		$r = 0.36$ (medium)	30/42 (71%)
					Significant relationship between alcohol-related problems and APS-discrepancy, $p < .005$ †		$r = 0.15$ (small)	
					No significant relationship between drinking to cope or alcohol-related problems and APS-high standards‡.		n/a $r = -0.01$ $r = -0.06$	
				Univariate ANOVA	Significant differences between adaptive perfectionists, maladaptive perfectionists and non-perfectionists for drinking to cope motives, $p < .0005$ and alcohol-related problems, $p < .005$.			
				Post hoc tests, Ryan – Einot- Gabriel- Welsch (REGWQ)	Maladaptive perfectionists scored significantly higher than adaptive perfectionists and non-perfectionists on drinking to cope motives. No significant different between drinking to cope motives for adaptive perfectionists and non-perfectionists.			

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Citation/ Author (Country)	Study Design	Sample	Outcome measures	Data analytical method	Study Findings		Effect size (if reported)	Quality Rating
					Primary	Secondary		
				Structural Equation Model	Adaptive perfectionists scored significantly lower than maladaptive perfectionists on alcohol- related problems. There was no significant differences between maladaptive perfectionists and non-perfectionists on alcohol-related problems.	Stress was not associated with alcohol-related problems for adaptive perfectionist but was positively associated with alcohol-related problems for maladaptive perfectionists. Stress was inversely related to alcohol-related problems for non-perfectionists. Higher drinking to cope was also linked to more alcohol- related problems		
Sherry et al. (2012) (US)	Cross-sectional	N=216 College students Mean age: 19.10 (s.d. = 1.69)	Perfectionism: DAS Substance Use: AUDIT	Correlation	Perfectionistic attitudes and hazardous drinking, $p < .01$). Perfectionistic attitudes and alcohol consumption.		$r = 0.22$ (small) n/a $r = 0.02$	29/42 (69%)

PERFECTIONISM AND SUBSTANCE USE

Citation/ Author (Country)	Study Design	Sample	Outcome measures	Data analytical method	Study Findings		Effect size (if reported)	Quality Rating
					Primary	Secondary		
				Structural Equation Modelling	Significant path identified between perfectionistic attitudes and hazardous drinking ($p < .05$).	The effect of perfectionism on hazardous drinking can indirectly lead to increases in depression.		
Wiederman & Pryor (1997) (US)	Cross- sectional	N=110 Adolescent girls who met diagnostic criteria (DSM- III-R, American Psychiatric Association, 1987) for anorexia nervosa or bulimia nervosa. Mean age: 15.43 (s.d. = 1.36).	Perfectionism: EDI Substance misuse: DSED-R	Pearsons Correlation	No significant relationship between perfectionism and number of substances	None	n/a	24/42 (57%)

‡ No n reported due to inconsistencies in n because of pairwise deletion of data

Note: HMPS = Multi-dimensional Perfectionism Scale (Hewitt & Flett, 1991b); FMPS = Multi-dimensional Perfectionism Scale (Frost, Marten, Lahart, & Rosenblate, 1990); AUD = Alcohol use disorders; MCMI: Million Clinical Multiaxial Inventory, (Millon, 1983); EDI = Eating Disorder Inventory (Garner Olmstead & Polivy 1983); APS-R = Almost Perfection Scale-Revised (Slaney et al., 2001); DMQ = Drinking Motives Questionnaire (Cooper 1994; Cooper, Russell, Skinner & Windle, 1992); DAS = Dysfunctional Attitude Scale-Form A, (Weismann & Beck, 1978); AUDIT = Alcohol use disorders identification test (Saunders et al., 1993); EDI = Eating Disorders Inventory perfectionism subscale (Garner et al., 1983); DSED-R = Diagnostic survey for Eating disorders-revised (Johnson, 1985).

Discussion

The aim of the current systematic review was to identify and appraise previous research exploring perfectionism and substance use, review methods of measuring perfectionism in the selected studies and establish if research has indicated if there is a relationship between perfectionism and substance use. The quality assessment identified quality scores ranging from 12 to 30, (maximum possible score of 42). The quality analysis identified that none of the studies had included power calculations or had attempted nor discussed statistical power in their results. In addition, there was no reference to service user involvement in the development of the research design in any of the studies. The studies overall failed to provide any justification for choice of analytical method or reference to an explicit theoretical framework. There was also a lack of rationale for choice of data collection tool particularly with reference to substance use measures.

Conceptualising and measuring of perfectionism

Seven of the studies used multi-dimensional measures of perfectionism while the others employed subscales of general measures to assess perfectionistic traits. Perfectionism was conceptualised in different ways across the studies even by those which used the same outcome measure. Some studies focused on the specific subscales of the measures used within the research (e.g. doubts about actions, socially-prescribed perfectionism) while others used measures to categorise participants into a subtype of perfectionism (e.g. high or low perfectionist, adaptive or maladaptive perfectionist). Other terms used to conceptualise perfectionism were perfectionistic attitudes and perfectionistic tendencies. All studies reported at least adequate internal consistency reliability of measures although some did not calculate reliability. Validity was also reported for all measures although type of validity was not always specified.

The different approaches to measuring perfectionism made it difficult to draw firm conclusions from overall study findings. More consistent use of perfectionism measures, rather than conceptualising perfectionism in different ways would facilitate a clearer understanding of the role of perfectionism in substance use and also allow comprehensive meta-analysis to be conducted. In addition, not all scales show adequate psychometric properties. Those that do such as HMPS, FMPS, and APS-R should be used in future research.

Six studies investigated alcohol use, one looked at only drug use, and the remainder measured a combination of drug and alcohol use. Including studies which assessed more than one substance made it difficult to draw specific conclusions about the relationship between perfectionism and substance use. Moreover, the use of a broad definition of substance use in some studies is problematic due to the quantitative difference between heroin, cannabis and ecstasy for example (Kandel, 1975). Reporting of reliability and validity of substance use measures was mixed. Three studies did not report any psychometrics of substance use measures, while all the others reported at least adequate reliability and validity based on previous research. In addition to this the quality assessment identified that the studies did not report rationale for selection of data collection tool, particularly with reference to substance use measures. There was some variation in how substance use was measured. Some studies identified frequency of drug or alcohol use, but did not specify if level of intake was clinical or non-clinical. It was unclear in these instances if higher alcohol intake could be categorised as risky or excessive amounts of alcohol. Other studies identified specific disorders associated with substance use (i.e. ‘alcohol use disorder’) and others categorised individuals into binge drinkers or non-binge drinkers (notably there is not a single accepted definition of what constitutes a drinking “binge”). This alongside the lack of psychometric assessment of measures selected identifies a need for more consistent approaches to measuring substance use. This

includes using reliable and validated measures of substance (e.g. Alcohol Use Disorder and Associated Disabilities Interview Schedule, Grant, Dawson, Hasin, 2001; Alcohol use disorder identification test, Babor, Biddle-Higgins, Saunders, & Monteiro, 2001).

Relationship between perfectionism and substance misuse

The studies identified in the review gave some insight into the relationship between perfectionism and substance use. The heterogeneity of how perfectionism and substance use were conceptualised and measured makes it difficult to compare results of studies and therefore draw firm conclusions. However, it was found that individuals who scored highly in maladaptive perfectionism measures (e.g. socially-prescribed perfectionism, APS-discrepancy), were significantly more likely to use alcohol. This was particularly evident in research which incorporated measures of distress (e.g. negative affect, stress) indicating that perfectionists are more likely to drink when experiencing emotional dysregulation (Bardone-Cone et al., 2012; Rice & Van Arsdale, 2010). A number of studies also demonstrated a direct association between maladaptive perfectionism and alcohol use, however again, these findings were mixed (Bulik et al., 2004; Flett et al., 2008; Hewitt & Flett, 1991b; Pritchard et al., 2007). Studies which looked at only drug use identified a significant relationship between other-orientated perfectionism and drug abuse (Hewitt & Flett, 1991b) and no relationship between perfectionism and drug use (Graff Low & Gendaszek, 2002). However, these studies had some of the lowest quality ratings and did not assess reliability or validity of data collection methods for drug use. Therefore it was not possible to quantify the quality or suitability of the rating scales employed. As a result caution should be used when drawing inferences from their results. Of the studies which did identify a significant relationship between perfectionism and drug use, it was more often demonstrated in male participant groups. It is important to note that, in some cases, drug use data collection also incorporated

nicotine and alcohol so again it is difficult to disentangle the results and draw firm conclusions.

Sherry and Hall (2009) state that perfectionists are likely to engage in excessive behaviours such as over-control and under-control (e.g. binge drinking, abstinence). The reviewed studies identified that when perfectionists do engage in drinking it is more extreme (e.g. hazardous drinking, development of alcohol use disorder) (Bulik et al., 2004; Sherry et al., 2012) suggesting lack of control when drinking. There was also evidence of over-control as some studies indicated that perfectionism, particularly with what are considered adaptive aspects of perfectionism, is protective against drinking or drug use (Flett et al., 2008; Pritchard et al., 2007). However, inconsistent with findings of adaptive perfectionists restricting substance use, Hewitt and Flett (1991b) identified a significant positive relationship between self-orientated perfectionism and alcohol abuse in a group of individuals accessing treatment for mental health difficulties via psychiatric hospital. Perfectionism has been associated with self-criticism, interpersonal conflict, a chronic sense of failure, shame and suicidal ideation (Hewitt & Flett, 1993; Sherry, Stoeber, & Ramasubbu, 2016; Chang, Watkins, & Banks, 2004). Through recent research possible mediators such as maladaptive coping styles, rumination and emotional dysregulation have been identified as key factors that link perfectionism and the negative outcomes associated with it (Achtziger & Bayer, 2013). This may explain why two of the three studies conducted with clinical populations in the current review identified significant relationships between perfectionism and substance use including when looking at adaptive aspects of perfectionism. It may also provide rationale for significant relationships between perfectionism and substance use at times of emotional dysregulation. This indicates that there are mediating or moderating factors such as distress, poor coping strategies or social disconnection influencing the relationship between perfectionism and substance use.

Although some research has indicated that adaptive perfectionists are less likely to experience stress related symptoms than maladaptive and non-perfectionists (Suh, Gnilka, & Rice, 2017), a recent review identified both adaptive and maladaptive aspects of perfectionism as showing a positive association with psychopathology (Limburg et al., 2016). In addition, there is evidence that individuals who score highly on either adaptive or maladaptive aspects of perfectionism are particularly vulnerable to psychological distress when exposed to stressful situations (Dunkley, Mandel, Ma, 2014). Previous reviews have identified avoidant coping, rumination, and perceived social support as mediators and moderators of perfectionism and other mental health difficulties such as depression, anxiety and suicidal beliefs (Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000; O'Connor, O'Connor, & Marshall, 2007). Similar to other areas of research of perfectionism and psychopathology, to better understand the relationship between perfectionism and substance use, it will also be important to consider other factors which may be influencing the relationship.

Mixed findings for the relationship between adaptive perfectionism and substance use are comparable with literature on perfectionism and other variables such as stress. Previous exploration into the relationship between adaptive perfectionism and stress identified adaptive perfectionism as a vulnerability factor for stress, having no effects on stress, and as a protective factor against stress (Zureck, Altstotter-Gleich, Wolf, & Brand, 2014). As a result of these equivocal findings it is questionable whether individuals categorised as adaptive perfectionists employ coping strategies such as alcohol and drug use any differently than maladaptive perfectionists when they are faced with setbacks and are unable to meet high standards or attain goals (Flett & Hewitt, 2002). Particularly as perfectionism has been described as both an outcome of, (through the use of perfectionistic strivings and high standards to reduce anxiety), and a cue for, distress and low mood (Egan et al., 2011; Shafran

& Mansell, 2001). Most of the reviewed studies did not measure or control for participants stress despite the use of perfectionism to avoid negative consequences such as criticism, failure and rejection being well documented in the literature (Slade & Owens, 1998; Hewitt & Flett, 1991b). It is possible that in cases where adaptive perfectionism leads to substance misuse, individuals fail to employ adaptive coping mechanisms (e.g. problem-focused coping, positive reinterpretation) associated with adaptive perfectionism, rather than avoidant coping often associated with maladaptive perfectionism (Dunkley et al., 2000; Dunkley et al., 2004). It has been theorised that engaging in adaptive coping strategies may 'offset the potential negative outcomes of distress' (pg. 161, Dunkley, Solomon-Krakus, & Moroz, 2016) in perfectionists.

Strengths and Limitations of the studies

Most of the studies were conducted in American or Canadian schools or colleges, particularly with psychology students, which limits the generalisability of the findings. However it allows research samples with similar demographic characteristics to be compared. This is consistent with systematic reviews carried out in other areas of perfectionism and psychopathology which also identified more non-clinical studies than clinical (Limburg et al., 2016). Four of the studies employed female only samples which limits the ability to generalise findings, although those which had mixed samples provided good variability across gender. The majority of participants described their ethnicity as White except one study where most participants described their ethnicity as Asian (Sherry et al., 2012). So and Wong (2006) demonstrated that Asian-American college students had a significantly higher rate of alcohol use than the national American average rate for 18 to 20 year olds, including American college students. This may account for the rates of hazardous drinking demonstrated in the sample, and again caution should be used when considering the results of the study. Although the age range for participants included in studies was adequate, of those

studies that reported mean age they were all 20 years old or less except one with mean age of 35, limiting the generalisability of findings.

Six of the studies utilised two very commonly used and well validated measures of perfectionism, although they used them in variable ways. All studies employed self-report measures of perfectionism and substance use. Some of the measures used were not normed for the population included in the study. Six studies investigated alcohol use, one looked at only drug use with the remainder measuring a combination of drug and alcohol use. Reporting of reliability and validity of substance use measures was mixed. Three studies did not report any psychometrics of substance use measures, while all the others reported at least adequate reliability and validity based on previous research. Caution is also used when drawing on results of this review due to the poor methodological quality of some of the studies that were included. In addition to this all the studies were either cohort or cross-sectional designs, therefore we cannot infer causality.

Strengths of this review

Although only cohort and cross-sectional design studies were included in this review, the search strategy included studies from a range of methodologies. This increased the scope for all evidence on perfectionism and substance use to be collated. In addition to this only journal articles from published research were included to ensure the quality of those selected. The use of a second reviewer and research team to discuss and cross check paper selection and quality assessment ensured reduction of human error and selection bias.

Limitations of this review

Only ten studies were identified for inclusion in the final review. Given the large body of research available on perfectionism this is a small number. This may be reflective of the strict inclusion criteria for the study, with the aim of maintaining quality of research reviewed. There may be publication bias as non-English language and unpublished research

were not included in the review (Dundar & Fleeman, 2014). In addition to this it would have been beneficial to include a second reviewer of data extraction to ensure consistency and accuracy of this process.

Clinical Implications

As with other areas of research with perfectionism the relationship with substance use is complex. General assumptions that perfectionists do not engage in substance misuse are misleading. It is evident that the problems associated with perfectionism and substance use are present across a number of client groups: clinical, non-clinical and in educational settings. It has been identified that perfectionism can impact on the therapeutic process and affect outcomes therefore it is important that it is at least assessed with clients, particularly those who are struggling to make progress. This should be done with clients attending addiction services as well as other mental health settings due to the co-morbid, trans-diagnostic nature of perfectionism.

Treatment approaches should include reviewing client coping strategies and developing more adaptive approaches to dealing with difficulties associated with perfectionism such as suicidal ideation, self-criticism, rumination and worry, which substance use may help individuals to escape. In addition to this supporting individuals to build up support networks or manage social anxiety associated with perfectionistic thinking, which they may tend to use substances to deal with. Particularly because of the evidence to suggest that perfectionists try to conceal their flaws, resulting in them not confiding in others when they are experiencing difficulties, or as has been suggested by Flett et al. (2008), drinking at home alone. Treatment approaches to consider may include self-compassion, mindfulness, and cognitive behaviour therapy to try to address concerns.

Future research

Due to the variability of conceptualising and measuring perfectionism in previous studies there is a need for more consensus among researchers going forward. It would also be advantageous to incorporate alternatives to self-report measures of perfectionism, such as implicit association tasks, as recommended by Rice and Richardson (2014). This mixed methods approach will take into account implicit cognitive processes regarding perfectionism which should also suffer from fewer demand characteristics. Indeed the use of implicit measures has recently been encouraged (Sheeran et al., 2013). Individuals high in perfectionism are considered less likely to report imperfections (Hewitt et al., 2003), as a result using only self-report measures of alcohol misuse could be misleading in this population. Future research should move towards longitudinal designs including non-students and individuals from a wider age range as it has been suggested by Flett et al., (2008) that drinking problems may only become evident for perfectionists as they experience stressors and setbacks in their life.

Conclusion

To the best of the author's knowledge this systematic review is the first attempt to collate and summarise the evidence about the relationship between perfectionism and substance use. The findings of the review highlight the complex nature of the relationship between these variables, with some studies finding aspects of perfectionism as protective against substance use and others identifying it as a risk factor. The review identifies preliminary evidence to suggest that perfectionists are more likely to engage in substance use when they are exposed to challenging circumstances. There is also evidence to suggest that some individuals high in perfectionism abstain from substance use at these times. Similar to other areas of research in perfectionism it seems there are important mediating and moderating factors to consider to better understand the relationship between substance use

and perfectionism and future research should develop this. The area is further complicated by the use of different perspectives on conceptualising and measuring perfectionism and the lack of good quality studies carried out in this area. It is identified that further research in the area of perfectionism and substance use is required, considering mediating factors such as coping styles that may influence the relationship and provide a rationale for the conflicting findings to date.

References

- Achtziger, A., & Bayer, U. C. (2013). Self-control mediates the link between perfectionism and stress. *Motivation and emotion*, 37(3), 413-423.
- Babor, T. F., Biddle-Higgins, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *AUDIT: The alcohol use disorders identification test: Guidelines for use in primary health care*. Geneva, Switzerland: World Health Organization.
- Bardone-Cone, A. M., Brownstone, L. M., Higgins, M. K., Harney, M. B., & Fitzsimmons-Craft, E. E. (2012). Predicting difficulties controlling overeating and drinking when experiencing negative affect in undergraduate women. *Journal of social and clinical psychology*, 31(10), 1051-1073.
- Benson, E. (2003). The many faces of perfectionism. *Monitor on psychology*, 34(10), 18.
- Blundell, M. (2014). Understanding and synthesising my data. In A. Boland, M. G. Cherry, & R. Dickson (Eds.), *Doing a systematic review: A students guide*. (pp. 99-123). London: Sage Publications.
- Bulik, C. M., Klump, K. L., Thornton, L., Kaplan, A. S., Devlin, B., Fichter, M. M.,... Mitchell, J. E. (2004). Alcohol use disorder comorbidity in eating disorders: A multi-center study. *Journal of clinical psychiatry*, 65(7):1000-1006.
- Burgess, A. M., Frost, R. O., & DiBartolo, P. M. (2016). Development and validation of the frost multidimensional perfectionism scale–brief. *Journal of psychoeducational assessment*, 34(7), 620-633.
- Chang, E. C., Watkins, A., & Banks, K. H. (2004). How adaptive and maladaptive perfectionism relate to positive and negative psychological functioning: Testing a stress-

mediation model in black and white female college students. *Journal of counselling psychology*, 51(1), 93.

Cheng, P., Dolsen, M., Girz, L., Rudowski, M., Chang, E., & Deldin, P. (2015). Understanding perfectionism and depression in an adult clinical population: Is outcome expectancy relevant to psychological functioning? *Personality and individual differences*, 75, 64-67.

Conger, J. J. (1956). Alcoholism: Theory, problem and challenge – II. Reinforcement theory and the dynamics of alcoholism. *Quarterly journal of studies on alcohol*, 17, 296 -305.

Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological assessment*, 6, 117–128.
doi:10.1037/1040-3590.6.2.117

Cooper, M. L., Frone, M. R., Russell, M., & Mudar, P. (1995). Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *Journal of personality and social psychology*, 69(5), 990.

Cooper, M. L., Russell, M., Skinner, J. B., & Windle, M. (1992). Development and validation of a three-dimensional measure of drinking motives. *Psychological assessment*, 4(2), 123.

Dundar, Y., & Fleeman, N. (2014). Developing my search strategy and applying inclusion criteria. In A. Boland, G. Cherry, R. Dickson (Eds.), *Doing a systematic review: A student's guide*. (pp. 35-62). London, England: SAGE Publications Ltd.

Dunkley, D. M., Mandel, T., & Ma, D. (2014). Perfectionism, neuroticism, and daily stress reactivity and coping effectiveness 6 months and 3 years later. *Journal of counselling psychology*, 61(4), 616.

Dunkley, D. M., Solomon-Krakus, S., & Moroz, M. (2016). Personal standards and self-critical perfectionism and distress: Stress, coping, and perceived social support as mediators and moderators. In D. S. Molner, & F. M. Sirois (Eds.), *Perfectionism, health, and well-being*. (pp. 157-176). London, England: Springer International Publishing.

Dunkley, D. M., Sanislow, C. A., Grilo, C. M., & McGlashan, T. H. (2004). Validity of DAS perfectionism and need for approval in relation to the five-factor model of personality. *Personality and individual differences*, 37, 1391-1400.
doi:10.1016/j.paid.2004.01.009

Dunkley, D. M., Blankstein, K. R., Halsall, J., Williams, M., & Winkworth, G. (2000). The relation between perfectionism and distress: Hassles, coping, and perceived social support as mediators and moderators. *Journal of counselling psychology*, 47(4), 437.

Egan, S. J., Wade, T. D., & Shafran, R. (2011). Perfectionism as a transdiagnostic process: A clinical review. *Clinical Psychology Review*, 31(2), 203-212.

Enns, M. W., & Cox, B. J. (2002). The nature and assessment of perfectionism: A critical analysis. In G. L. Flett, & P. L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 33–62). Washington, DC: American Psychological Association.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1997). Structured Clinical Interview for DSM-IV Axis I disorders (SCID I). New York, NY: Biometric Research Department.

Flett, G. L., & Hewitt, P. L. (2002). *Perfectionism and maladjustment: An overview of theoretical, definitional, and treatment issues*. Washington, DC: American Psychological Society.

Flett, G., & Hewitt, P. (2014). Measures of perfectionism. In G. Boyle, D. Saklofske, & G. Mathews (Eds.), *Measures of personality and social psychology constructs* (pp. 595-618). London, England: Academic Press.

Flett, G. L., Goldstein, A., Wall, A. M., Hewitt, P. L., Wekerle, C., & Azzi, N. (2008). Perfectionism and binge drinking in Canadian students making the transition to university. *Journal of American college health*, 57(2), 249-256.

Frost, R. O., Glossner, K., & Maxner, S. (2010). Social anxiety disorder and its relationship to perfectionism. In: G. Hofmann & P. M. Di Bartolo (Eds.), *Social anxiety: Clinical, developmental, and social perspectives* (pp. 119–145). London, England: Academic Press.

Frost, R.O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive therapy and research*, 14, 449–468. doi:10.1007/BF01172967

Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International journal of eating disorders*, 2(2), 15-34.

Germer, C. K., & Neff, K. D. (2013). Self-compassion in clinical practice. *Journal of clinical psychology: In session*, 69(8), 1-12.

Glynn, S. M., & Ruderman, A. J. (1986). The development and validation of an eating self-efficacy scale. *Cognitive therapy and research*, 10(4), 403-420.

Graff Low, K., & Gendaszek, A. E. (2002). Illicit use of psychostimulants among college students: A preliminary study. *Psychology, health & medicine*, 7(3), 283-287.

Grant, B.F., Dawson, D.A., Hasin, D.S. (2001). *The alcohol use disorder and associated disabilities interview schedule-DSM-IV version*. National Institute on Alcohol Abuse and Alcoholism, Bethesda, MD.

Grzegorek, J. L., Slaney, R. B., Franze, S., & Rice, K. G. (2004). Self-criticism, dependency, self-esteem, and grade point average satisfaction among clusters of perfectionists and non-perfectionists. *Journal of counselling psychology*, 51(2), 192.

Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology*, 15(1), 27–33.

Hewitt, P. L., & Flett, G. L. (1991a). Dimensions of perfectionism in unipolar depression. *Journal of abnormal psychology*, 100, 98–101. doi:10.1037/0021-843X.100.1.98

Hewitt, P. L., & Flett, G. L. (1991b). Perfectionism in the self and social contexts: Conceptualisation, assessment, and association with psychopathology. *Journal of personality and social psychology*, 60, 456-470. doi:10.1037/0022-3514.60.3.456

Hewitt, P. L., & Flett, G. L. (1993). Dimensions of perfectionism, daily stress, and depression: A test of the specific vulnerability hypothesis. *Journal of abnormal psychology*, 102(1), 58.

Hewitt, P. L., Norton, G. R., Flett, G. L., Callander, L., & Cowan, T. (1998). Dimensions of perfectionism, hopelessness, and attempted suicide in a sample of alcoholics. *Suicide and Life-Threatening Behavior*, 28(4), 395-406.

Hewitt, P. L., Flett, G. L., Sherry, S. B., Habke, M., Parkin, M., Lam, R.W., ...Stein, M.B. (2003). The interpersonal expression of perfection: Perfectionistic self-presentation and psychological distress. *Journal of personality and social psychology*, 84(6), 1303-1325. doi: 10.1037/0022-3514.84.6.1303

Hollender, M. H. (1965). Perfectionism. *Comprehensive psychiatry*, 6, 94–103. doi: 10.1016/S0010-440X(65)80016-5

Hurlbut, S. C., & Sher, K. J. (1992). Assessing alcohol problems in college students. *Journal of American college health*, 41(2), 49-58.

James, K., Verplanken, B., & Rimes, K. A. (2015). Self-criticism as a mediator in the relationship between unhealthy perfectionism and distress. *Personality and individual differences*, 79, 123-128.

Johnson, L. D., O'Malley, P. M., Bachman, J. G. (1984). *Drugs and American high school students*. Washington, DC: Government Printing Office.

Kelly, A. C., Zuroff, D. C., Foa, C. L., & Gilbert, P. (2010). Who benefits from training in self-compassionate self-regulation? A study of smoking reduction. *Journal of social and clinical psychology*, 29(7), 727-755.

Kandel, D. (1975). The measurement of "ever use" and "frequency-quantity" in drug use surveys. *National Institute on Drug Abuse research monograph series*, 27-35.

Kline, P. (1999). *The handbook of psychological testing* (2nd ed.). London: Routledge.

Levinson, C. A., Rodebaugh, T. L., Shumaker, E. A., Menatti, A. R., Weeks, J. W., White, E. K., ... Liebowitz, M. R. (2015). Perception matters for clinical perfectionism and social anxiety. *Journal of anxiety disorders*, 29, 61-71.

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., ... Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *PLoS Med*, 6(7), e1000100. doi:10.1136/bmj.b2700

Limburg, K., Watson, H. J., Hagger, M. S., & Egan, S. J. (2016). The relationship between perfectionism and psychopathology: A meta-analysis. *Journal of clinical psychology*, 0(0), 1–26. doi: 10.1002/jclp.22435

Lo, A., & Abbott, M. J. (2013). Review of the theoretical, empirical, and clinical status of adaptive and maladaptive perfectionism. *Behaviour change*, 30(2), 96-116.

Luthar, S. S., & Becker, B. E. (2002). Privileged but pressured? A study of affluent youth. *Child development*, 73(5), 1593-1610.

Mathew, J., Dunning, C., Coats, C., & Whelan, T. (2014). The mediating influence of hope on multidimensional perfectionism and depression. *Personality and individual differences*, 70, 66-71.

Maloney, G. K., Egan, S. J., Kane, R. T., & Rees, C. S. (2014). An etiological model of perfectionism. *PloS one*, 9(5), e94757. doi:10.1371/journal.pone.0094757

Millon, T. (1983). Millon Clinical Multiaxial Inventory, MCMI. National Computer Systems, Incorporated.

Mohr, C. D., Brannan, D., Wendt, S., Jacobs, L., Wright, R., & Wang, M. (2013). Daily mood-drinking slopes as predictors: A new take on drinking motives and related outcomes. *Psychology of addictive behaviors*, 27(4), 944-955. doi: 10.1037/a0032633

Molnar, D. S., & Sirois, F. M. (2016). Perfectionism, health, and well-being: Epilogue and future directions. In D. S. Molner & F. M. Sirois (Eds), *Perfectionism, health, and well-being* (pp. 285-302). London, England: Springer International Publishing.

O'Connor, R. (2007). The relations between perfectionism and suicidality: A systematic review. *Suicide and life-threatening behavior*, 37(6), 698-714.

O'Connor, R., & O'Connor, D. B. (2003). Predicting hopelessness and psychological distress: The role of perfectionism and coping. *Journal of counselling psychology*, 50(3), 362-372.

O'Connor, D. B., O'Connor, R. C., & Marshall, R. (2007). Perfectionism and psychological distress: Evidence of the mediating effects of rumination. *European journal of personality*, 21(4), 429-452.

Parker, W. (1997). An empirical typology of perfectionism in academically talented children. *American educational research journal*, 34, 545-562.

Pritchard, M. E., Wilson, G. S., & Yamnitz, B. (2007). What predicts adjustment among college students? A longitudinal panel study. *Journal of American college health*, 56(1), 15-22.

Rheaume, J., Freeston, M. H., Ladouceur, R., Bouchard, C., Gallant, L., Talbot, F.,... Vallieres, A. (2000). Functional and dysfunctional perfectionists: Are they different on compulsive-like behaviours? *Behaviour Research and Therapy*, 38, 119-128.

Rice, K. G., & Ashby, J. S. (2007). An efficient method for classifying perfectionists. *Journal of counselling psychology*, 54(1), 72.

Rice, K. G., & Mirzadeh, S. A. (2000). Perfectionism, attachment, and adjustment. *Journal of counselling psychology*, 47(2), 238-250.

Rice, K. G., & Richardson, C. M. (2014). Classification challenges in perfectionism. *Journal of counselling psychology*, 61(4), 641-648.

Rice, K. G., & Van Arsdale, A. C. (2010). Perfectionism, perceived stress, drinking to cope, and alcohol-related problems among college students. *Journal of counselling psychology*, 57(4), 439-450.

Saunders, J. B., Aasland, O. G., Babor, T. F., De la Fuente, J. R., & Grant, M. (1993). Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. *Addiction*, 88(6), 791-804.

Shafran, R., & Mansell, W. (2001). Perfectionism and psychopathology: A review of research and treatment. *Clinical psychology review*, 21(6), 879-906.

Sheeran, P., Gollwitzer, P. M., & Bargh, J. A. (2013). Nonconscious processes and health. *Health psychology*, 32(5), 460-473.

Sher, K. J. (1987). Stress response dampening. In H. T. Blane, & K. E. Leonard (Eds.), *Psychological theories of drinking and alcoholism* (pp. 227-271). New York, NY: Guildford Press.

Sherry, S. B., & Hall, P. A. (2009). The perfectionism model of binge eating: tests of an integrative model. *Journal of personality and social psychology*, 96(3), 690.

Sherry, S. B., Stoeber, J., & Ramasubbu, C. (2016). Perfectionism explains variance in self-defeating behaviours beyond self-criticism: Evidence from a cross-national sample. *Personality and individual differences*, 95, 196-199.

Sherry, S. B., Hewitt, P. L., Flett, G. L., & Harvey, M. (2003). Perfectionism dimensions, perfectionistic attitudes, dependent attitudes, and depression in psychiatric patients and university students. *Journal of Counselling Psychology*, 50(3), 373-386.

Sherry, S. B., Hewitt, P. L., Stewart, S. H., Mackinnon, A. L., Mushquash, A. R., Flett, G.L.,... Sherry, D. L. (2012). Social disconnection and hazardous drinking mediate the link between perfectionistic attitudes and depressive symptoms. *Journal of psychopathology and behaviour assessment*, 34, 370-381.

Sirriyeh, R., Lawton, R., Gardner, P. & Armitage, G. (2011). Reviewing studies with diverse designs: The development and evaluation of a new tool. *Journal of evaluation in clinical practice*, 18(4), 746-752.

Slade, P. D., & Owens, R. G. (1998). A dual process model of perfectionism based on reinforcement theory. *Behaviour Modification*, 22, 372–390.

doi:10.1177/01454455980223010

Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). The revised almost perfect scale. *Measurement and evaluation in counselling and development*, 34, 130–145.

So, D. W., & Wong, F. Y. (2006). Alcohol, drugs, and substance use among Asian-American college students. *Journal of psychoactive drugs*, 38(1), 35-42.

Stairs, A. M., Smith, G. T., Zapsolski, T. C., Combs, J. L., & Settles, R. E. (2012). Clarifying the construct of perfectionism. *Assessment*, 19(2), 146-166.

Stoeber, J., & Hotham, S. (2013). Perfectionism and social desirability: Students report increased perfectionism to create a positive impression. *Personality and individual differences*, 55, 626-629.

Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and social psychology review*, 10, 295–319.

Stoeber, J., Harris, R. A., & Moon, P. S. (2007). Perfectionism and the experience of pride, shame, and guilt: Comparing healthy perfectionists, unhealthy perfectionists, and non-perfectionists. *Personality and Individual Differences*, 43(1), 131-141.

Stuart, J. (2009). *Maladaptive perfectionism and disordered eating in college women: The mediating role of self-compassion* (Doctoral dissertation) Retrieved from http://etd.fcla.edu/UF/UFE0024860/stuart_j.pdf

Suh, H., Gnilka, P. B., & Rice, K. G. (2017). Perfectionism and well-being: A positive psychology framework. *Personality and individual differences, 111*, 25-30.

Thomas, S. E., Merrill, J. E., von Hofe, J., & Magid, V. (2014). Coping motives for drinking affect stress reactivity but not alcohol consumption in a clinical laboratory setting. *Journal of studies on alcohol and drugs, 75*(1), 115–123.

Wade, T. D., O'Shea, A., & Shafran, R. (2016). Perfectionism and eating disorders. In F. M. Sirois, & D. S. Molnar (Eds.), *Perfectionism, health, and well-being* (pp. 205-222). London, England: Springer International Publishing.

Weissman, A. N., & Beck, A. T. (1978). Development and validation of the dysfunctional attitude scale: A preliminary investigation. *Dissertation abstracts international, 40*, 1389B-1390B.

Wiederman, M. W., & Pryor, T. (1998). The relationship between substance use and clinical characteristics among adolescent girls with anorexia nervosa or bulimia nervosa. *Journal of child & adolescent substance abuse, 6*(2), 39-47.

Zureck, E., Altstötter-Gleich, C., Wolf, O. T., & Brand, M. (2014). It depends: perfectionism as a moderator of experimentally induced stress. *Personality and individual differences, 63*, 30-35.

The role of coping motives and self-compassion in the relationship between maladaptive perfectionism and alcohol use.

Chapter 2: Empirical paper

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¹Article prepared for submission to Journal of Experimental and Clinical Psychopharmacology for peer review. Please see appendix B for a copy of the journal guidelines for authors.

Abstract

Although research has identified a relationship between perfectionism and substance use, findings thus far has been equivocal. The aim of this study was to explore if self-compassion mediates the relationship between unhealthy perfectionism and drinking to cope. A total of 89 non-dependent social drinkers completed both the self-report questionnaires and an implicit association task, measuring unhealthy perfectionism. Participants were recruited online via University of Liverpool website and other public social media forum (e.g. Twitter, Facebook). Self-report measures completed were Drinking Motives Questionnaire-revised (DMQ), Alcohol Use Disorders Identification Test (AUDIT), Self-Compassion Scale (SCS), Almost Perfect Scale –Revised (APS), and the Self-Concealment Scale. An online cross-sectional method was employed. Structural equation modelling indicated that although maladaptive perfectionists were less likely to be self-compassionate, this did not predict drinking.. Maladaptive perfectionism predicted drinking to cope and exploratory analysis found a possible role for self-concealment in the relationship between maladaptive perfectionism, drinking to cope and drinking behaviour. The results indicate that maladaptive perfectionists who engage in avoidant type coping are more likely to use alcohol. Clinically the precipitating and perpetuating nature of maladaptive perfectionists drinking to cope is highlighted alongside recommendations for intervention.

Keywords: Perfectionism, alcohol, coping, self-compassion, self-concealment.

Introduction

Perfectionism is a multifaceted personality trait and its relationship with psychopathology has been well documented in the literature. Research has shown perfectionism is associated with depression (Shafran & Mansall, 2001), anxiety (Gnilka, Ashby, & Noble, 2012), eating disorders (Egan, Wade, & Shafran, 2011), and suicidal ideation (O'Connor, 2007). Perfectionism has been identified as having two key components which are considered adaptive and maladaptive: perfectionistic strivings and perfectionistic concerns (Sirois & Molner 2016). Perfectionistic strivings has been associated with the more positive aspects of perfectionism compared with perfectionistic concerns, such as setting unduly high standards for the self that are unrealistic or expecting nothing less than perfection from the self (Molner & Sirois, 2016). Perfectionistic concerns are thought to represent maladaptive aspects of perfectionism. It has been linked to negative reinforcement, engaging in behaviour driven by avoidance of negative consequences such as criticism from others, or failure (Slade & Owens, 1998). Maladaptive perfectionism is also thought to indicate catastrophic thinking regarding lapses or mistakes (Hamcheck, 1978). As a result of this perfectionistic individuals engage in excessive self-criticism (Sherry, Stoeber, & Ramasubbu, 2016), rumination (O'Connor, O'Connor, & Marshall, 2007), can become isolated from others (Sherry et al., 2012), and can engage in avoidant coping strategies (Dunkley, Sainslow, Grilo, & McGlashan, 2006; O'Connor & O'Connor, 2003), contributing to mood and anxiety difficulties. Perfectionism and avoidant coping has been linked with hopelessness (O'Connor & O'Connor, 2003), psychological distress (O'Connor & O'Connor, 2003), burnout (Gnilka, McLaulin, Ashby, & Allen, 2017), and depression and anxiety (Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000).

One common avoidant coping mechanism is drinking to cope, whereby alcohol is consumed to reduce negative affect (Hasking, Lyvers, & Carlopio, 2011). Mohr et al. (2013)

argue that drinking motives predict alcohol-related problems, abuse and over consumption. When alcohol is used as a method of coping, drinking behaviour is reinforced as it is effective at reducing stress the individuals might be experiencing, through the tension reduction hypothesis (i.e. negative reinforcement; Sher, 1987; Conger, 1956). This results in an increase in alcohol consumption (Hasking et al., 2011). However it has been identified that drinking to cope is ineffective in the long term and exacerbates stress through alcohol myopia (Armeli et al., 2003). Notably, alcohol misuse often occurs co-morbidly with other psychological difficulties (Brooks, Kay-Lambkin, Bowman, & Childs, 2012). It is estimated that in the UK approximately 9% of adult men and 4% females display signs of alcohol dependence (Alcohol Concern, 2016). The suicidal risk for individuals addicted to alcohol is thought to be 10 times higher than those not (Wilcox, Conner, & Caine, 2004).

The relationship between perfectionism and alcohol use has been found to be equivocal. Perfectionism has been identified as a risk factor for alcohol use, including hazardous drinking (Sherry et al., 2012), but also a protective factor against alcohol misuse (Pritchard, Wilson, Yamniz, 2007). Furthermore mechanisms underlying the relationship between perfectionism and alcohol use are yet to be understood. One mechanism through which perfectionism may lead to alcohol misuse is through the development of maladaptive coping strategies. Specifically perfectionists often experience emotional dysregulation as a consequence of feelings of inadequacy (Hewitt and Flett, 1991), stress (Rice & VanArsdale, 2010), and social disconnection (Sherry et al., 2012). Subsequently, maladaptive perfectionists, may be motivated to drink alcohol to cope with emotional dysregulation (Rice & Van Arsdale, 2010), thereby leading to reliance on alcohol use as a coping method. Rice, Sauer, Richardson, Roberts and Garrison (2015) argued that the development of maladaptive coping strategies may be particularly prevalent in perfectionists as they are often reluctant to

seek support due to fear of appearing flawed, resulting in them under reporting distress or engaging in unhelpful coping strategies.

It has been suggested that supporting individuals to develop self-compassion can protect against negative affect and use of unhelpful coping strategies such as drinking (Brooks et al., 2012; Sirois, 2015). Rendon (2007) considers self-compassion to be an important coping mechanism that supports individuals to manage emotional experiences when faced with difficult situations. As perfectionists are thought to experience high levels of shame and embarrassment associated with fear of not attaining goals or perfection (Sagar & Stoeber, 2009), they can experience additional emotional distress. Emotional distress is considered a threat to self-regulation processes (Sirois, 2015), and can impact on the individuals mental wellbeing (Trompetter, de Kleine, & Bohlmeijer, 2016). It is thought that self-compassion activates an individual's soothing system, which regulates emotions that may be associated with any threats the individual experiences, such as rejection, anxiety, or shame (Kirsch et al., 2005). Self-compassion incorporates three main dimensions: kindness, common humanity and mindful acceptance (Gilbert, 2013) and involves employing a warm and accepting attitude towards the self (Neff, 2003a). It promotes adaptive functioning (Kelly, Zuroff, Foa, & Gilbert, 2010) and has also been associated with reduced self-criticism and increased resilience (Neff, 2003a, 2011). As a result it is proposed that increased self-compassion facilitates resilience by mediating people's reactions to negative events (Germer & Neff, 2013). Individuals high in self-compassion have been found to be less afraid of failure (Neff, Hsieh, & Dejjattarat, 2005) and to be more motivated towards health-related behaviours including stopping smoking (Kelly et al., 2010) adhering to diet (Adams & Leary, 2007) and stress management (Sirois, Kitner, & Hirsch, 2014). It is therefore proposed that self-compassion may be a contributing factor to the equivocal relationship between perfectionism and substance use. It is expected that higher self-compassion would protect

against drinking to cope motives and therefore alcohol consumptions. Due to the risks associated with drinking as a coping method and its association with many of the challenges related to perfectionism, developing a better understanding of the processes involved will allow us to identify improved methods of supporting individuals experiencing these difficulties. Exploring its relationship with self-compassion may lead to the development and implementation of more effective interventions to help lower the risk of dependence on alcohol as a coping strategy and the development of co-morbid difficulties as a consequence for perfectionists.

Conducting research within the area of perfectionism and alcohol consumption is complicated due to perfectionism being considered a socially desirable trait (Stoeber & Hotham, 2013) leading to bias in self-report measures. In addition, as maladaptive perfectionism has been associated with a deep fear of failure (Hamacheck, 1978) it is thought to be linked with a desire to conceal negative information about the self from others (Frost et al., 1995). The use of self-concealment is thought to reduce negative evaluation in the short term, but can lead to increased distress in the long term. Perfectionists are concerned about loss of status or ensuring they maintain perceived high standards, which again may lead to under reporting of negatively viewed behaviours such as alcohol consumption, or negative cognitions about themselves (Bieling, Israeli, & Antony, 2004).

Research involving self-report measures only assess deliberate evaluations, failing to capture attitudes that individuals are unable or unwilling to report, therefore not overcoming research bias (DeCuyper, Pieters, Claes, Vandromme, & Hermans, 2013; Sheeran, Gollwitzer, & Bargh, 2013). Implicit association tasks (IATs) measure automatic or spontaneous cognitions without relying on introspection, or effortful recall (Christiansen & Field, 2013). They rely on response latencies to identify underlying beliefs and attitudes to presented stimuli (Albarracin, Johnson, & Zanna, 2005). This allows researchers to identify

implicit cognitive processes which can identify maladaptive cognitions such as perfectionistic thinking, in the absence of the participant's awareness (Christiansen & Field, 2013). Online administration of the IAT has been found to be as valid as laboratory based testing (Houben & Wiers, 2008). Implicit association tasks are reliably associated with indices of anxiety, depression, alcohol misuse and phobias (Roefs et al., 2011). Critically, both De Cuyper et al. (2013) and Lowden (2011) successfully used variations of IAT to assess perfectionism implicitly. In addition Sheeran et al. (2013) recommend that health related research should incorporate non-conscious, impulsive, processes as these can have as much of an impact on health behaviour as conscious reflective processes. For example, implicit processes have been shown to be associated with dietary lapses in spite of conscious efforts to lose weight (Orbell & Sheeran, 1998); and individuals who consciously intend to reduce or abstain from drinking alcohol, may engage in excessive alcohol consumption (Sheeran, Gollwitzer, & Bargh, 2013; Stacy & Weirs, 2010; Reich, Below, & Goldman, 2010). Implicit tasks provide a method of assessing automatic cognitions individuals have about substances such as drink or food without requiring introspection (Christiansen & Field, 2013). Individuals may intend to consume substances in a particular manner (e.g. reduce alcohol or sugary foods), however, there may be associations in memory relating to the use of those substances which they are unaware of. These may become activated under certain conditions (e.g. when experiencing anxiety) and intentions to avoid intake of the substance may be overridden (Stacy & Weirs, 2010). Individuals may be aware of the things that trigger these lapses (e.g. social settings) but may be unaware of the process through which they impact on their behaviour (Bargh & Morsella, 2008).

Furthermore, maladaptive perfectionistic traits may influence the choices individuals make in self-report questionnaires due their explicit motivation to be perceived in a certain way (e.g. flawless) (see for example De Cuyper et al., 2013). Perfectionists may be less

inclined to disclose negative cognitions about the self (Bieling et al., 2004) resulting in delayed support being made available and increased reliance on avoidant coping strategies.

The aim of this study was to assess the indirect effect of coping motives on the relationship between maladaptive perfectionism and alcohol use. Maladaptive perfectionism was assessed using both self-report and implicit measures (the latter being less vulnerable to bias). It also investigated whether the relationship between perfectionism and alcohol use was mediated by self-compassion. It was hypothesised that maladaptive perfectionism would predict increased drinking to cope motives and that drinking to cope would predict increased alcohol use. It was also hypothesised that reduced self-compassion would predict increased drinking behaviours in non-dependent social drinkers. A measure of self-concealment was included to control for the likelihood that maladaptive perfectionists may attempt to conceal how much alcohol they have consumed. Exploratory analysis was also conducted on the role of self-concealment in the relationship between maladaptive perfectionism, and drinking behaviour.

Method

Participants

Data were collected between October 2015 and June 2016 from a non-clinical sample. A total of 89 participants completed the study. Although Robinson et al. (2014) found that there is variation in alcohol consumption amongst university students, it has been suggested that students under report drinking to cope due to viewing it as a normative reaction to stressful situations (Rice & Van Arsdale, 2010; Kuntsche, Kuendig, & Gmel, 2008). Therefore both students and non-students were invited to take part in the study. Participants were eligible to take part if they drank at least 1 unit of alcohol per week, were aged over 18 years old, were not pregnant or breast feeding and never accessed services for drug or alcohol problems. Participants also had to be fluent in English and reside within the UK or Ireland.

Power

Based on a moderate anticipated effect size (the indirect effect of perfectionism on AUDIT scores) in a model with two latent variables (13 observed variables) at 80% power and an alpha of .05 we need a minimum sample of 90 an effect based on Chi squared statistic and its derivatives (Cohen 1998; Westland 2010). This is also in line with Bentler and Chou (1987) recommendation of at least five participants per variable when the model includes latent variables. It is notable the power calculations for SEM vary widely depending upon the model fit index it is based upon. Indeed sample sizes of only 50 can be effective in detecting effects in models including four latent variables (see for example, Sideridis et al 2014). In addition this number of participants gave sufficient power to detect specific indirect effects using bias corrected bootstrapping assuming moderate iv-mediator and mediator-dv effects (Fritz & MacKinnon, 2007).

Procedure

Ethical approval was granted from the University of Liverpool (see Appendix C). An online self-report measure and Brief implicit association task (BIAT) was developed. The study was advertised (see Appendix D) on the digital announcements of the University homepage, on external websites (Twitter, Facebook, and Gumtree) and, with the approval of heads of department at the University, disseminated by administrative staff to staff and students within each department. Participants were provided with a web link which took them to a web page detailing participant information (Appendix E) and consent form (Appendix F). Participants were only able to access the questionnaire once consent had been provided. On completion of the online self-report measures participants were provided with instruction for the BIAT. A web link was presented to take participants to the millisecond webpage to complete the BIAT.

Demographic information was collected first (age, gender, religious beliefs, etc.) followed by self-report measures (AUDIT, Timeline Follow back, Self-compassion scale, APS-R, DMQ-R, self-concealment scale) and IAT. Once all questionnaires and the BIAT were completed participants were provided with debriefing information (see Appendix G) and an opportunity to take part in a prize draw for a £100 Amazon voucher. This was to acknowledge the time taken to complete the study.

Design

The study was a cross-sectional internet based study. Participants completed self-report measures and an implicit association task measuring maladaptive perfectionism.

Measures

Almost Perfect Scale-Revised (APS-R, Slaney, Rice, Mobley, Trippi, & Ashbly, 2001).

The APS-R (see Appendix H) has been designed as a method of measuring the multi-dimensional aspects of perfectionism. Individuals complete 23 items measured on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). The APS-R measures self-performance expectations and self-critical evaluation of one's ability to meet expected standards using three sub-scales standards, order and discrepancy (Rice & Richardson, 2014). The standards subscale assesses the expectations the individual places on themselves and the order subscale measures the extent to which individuals need structure in their life (Flett, Mara, Hewitt, Sirois, & Molnar, 2016) Discrepancy represents the difference between participants' expectations of themselves and their ability to achieve these (Lo & Abbott, 2013).

Cronbach's alpha for the subscales have been reported as standards (.85), order (.68) and discrepancy (.92). Items on the APS-R use a 7-point scale anchored by 1 (strongly disagree) and 7 (strongly agree). Score reliability, convergent validity, and criterion-related validity have been supported in several studies (e.g., Rice & Ashby, 2007; Slaney et al., 2001). Internal consistency (measured using Cronbach's alpha) in the current study was measured as $\alpha = .91$ for standards, $\alpha = .89$ for order and $\alpha = .96$ discrepancy. The APS-R was chosen over other measures of perfectionism due to having comparable reliability to other measures while also being less laborious (Stairs, Smith, Zapolski, Combs, & Settles, 2012).

Drinking motives questionnaire (DMQ-R; Cooper, 1994).

The DMQ-R (see Appendix I) consists of 20 items measuring four subscales: enhancement motives, coping motives, conformity motives and social motives. Individuals are asked to estimate the relative frequency of their alcohol use for each of the 20 indicated

reasons. Relative frequency is rated on a scale from 1 to 5 (1 = almost never/never; 2 = some of the time; 3 = half of the time; 4 = most of the time and 5= almost always/always). Subscale scores were computed as the mean of the relative frequency ratings for each of the five items on each subscale (Cooper, Russell, Skinner, & Windle, 1992). Internal consistency reliability has been reported as good for all four subscales of the DMQ-R ($\alpha = 0.79$ to 0.86) (Piasecki et al. 2014). In the current study Cronbachs alpha ranged from $\alpha = 0.84$ to 0.92 .

Self-compassion scale (Neff, 2003b).

The Self-compassion scale (see Appendix J) is composed of six subscales: self-kindness, self-judgement, common humanity, isolation, mindfulness and over-identification. Individuals are asked to complete 26 items. Negative subscales are reversed scored. The overall total score has been found to be a reliable measure for self-compassion ($\alpha=.93$) (Neff, Kirkpatrick, & Rude, 2007). In the current sample internal consistency for total scale scores was $\alpha = .77$ and ranged from $\alpha = .77$ to $.85$ for subscale scores.

Self-concealment scale (Larson & Chastain, 1990)).

The self-concealment scale (see Appendix K) is a 10-item questionnaire that measures a person's tendency to conceal personal information that is distressing or negative. Individuals high in perfectionism are considered less likely to report imperfections (Hewitt et al., 2003) therefore, the self-concealment scale will be used to control for the likelihood of perfectionists under-reporting alcohol use. It has been shown to have high internal consistencies ($\alpha > .85$) and high retest reliability after 4 weeks and 7 weeks (Cramer & Barry, 1999). In the current study internal consistency was measured as $\alpha = .93$.

Alcohol use disorder identification test (AUDIT; Babor, Biddle-Higgins, Saunders, & Monteiro, 2001).

The AUDIT (see Appendix L) has been found to provide an accurate measure of risk across gender, age and culture (Babor et al., 2001). The measure consists of 10 questions

categorised to identify hazardous alcohol use, dependence symptoms and harmful alcohol use. Each item is scored 0 to 4 and these are then added to give a total overall score. Scores of 8-15 are thought to indicate medium level of alcohol use, scores of 16 -19 indicate high levels of use, while 20 or above indicates severe alcohol use (Baber et al., 2001). Internal consistency was reported as reported good ($\alpha = .86$) and test-retest reliability ($\alpha = .90$) (Babor et al., 2001).

Timeline follow back (TLFB; Sobell & Sobell, 2000).

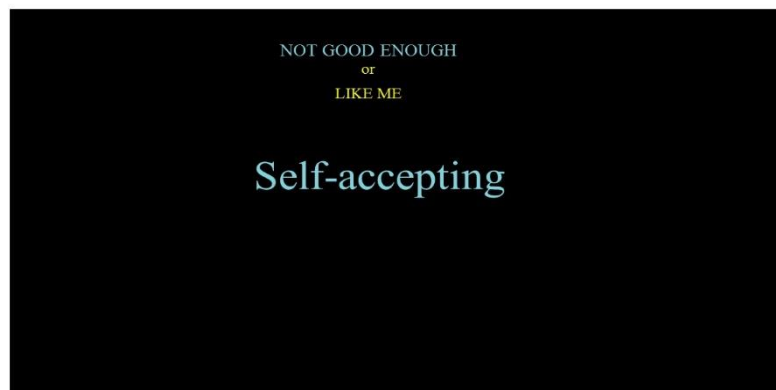
The TLFB, (see Appendix M) is a retrospective daily estimation measure designed to gather day-by-day reports of drinking for 2 weeks before the administration date (Hoeppe, Stout, Jackson, & Barnett, 2010). Participants are presented with a two week calendar to record estimates of daily alcohol consumption over the reporting interval. Visual prompts are provided to inform individuals of the number of alcohol units in typical alcoholic beverages. The TLFB has been described as having good test re-test reliability and predictive and concurrent validity (Carey, 1997). It allows a number of different continuous variables that generate different and more precise information about drinking than summary measures and also it provides researchers and clinicians with a useful picture of a person's drinking (Sobell & Sobell, 2000; Sobell et al., 2003).

Brief IAT (Sriram & Greenwald, 2009).

A brief IAT (BIAT) was developed using Millisecond software (www.millisecond.com) for online administration. BIAT's are a shorter version of the IAT task to reduce the number of trials the participant has to endure from approximately 180 to less than 80 (Sriram & Greenwald, 2009). For the purpose of this study the BIAT was used to measure automatic memory associations between the person's beliefs about themselves, maladaptive perfectionistic statements, and adaptive perfectionistic statements. The test items were split into two categories of words defined as "self" and "perfectionism". These

categories were then divided into two dimensions, “self” into ‘like me’ vs. ‘not like me’; and ‘perfectionism into ‘good enough’ vs. ‘not good enough’. The test was based on procedures outlined by Sriram and Greenwald (2009) and stimuli words were created drawing on the discrepancy subscale items of the APS-R. An expert in the field was consulted who previously developed a measure of perfectionism (Mitzman, Slade, & Dewey, 1994). The task was piloted by three students who provided feedback on the presentation of items.

‘like me’ ‘not good enough’ task stimuli



‘like me’ ‘good enough’ task stimuli

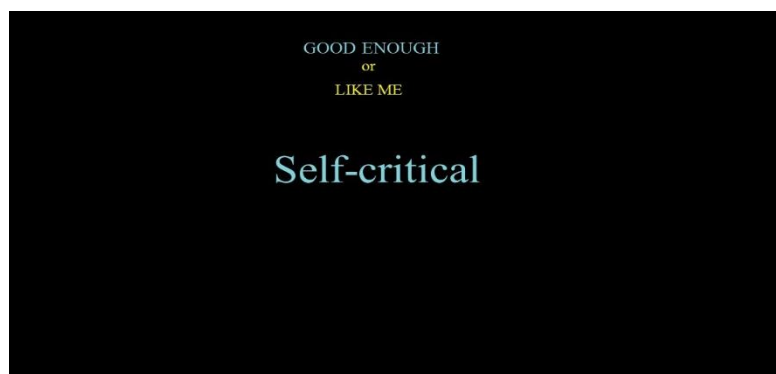


Figure 2. Examples of BIAT stimuli

Upon beginning the task participants were presented with instructions. They were told to focus on only one dimension from each of the two categories in each task block (e.g. ‘like me’, ‘not good enough’). Prior to each block, subjects were presented with two category labels (e.g. ‘like me’, ‘not good enough’) together with examples of the words from the category (see Appendix N). Individuals were instructed to press ‘I’ key for words or statements they associated with themselves (‘like me’) and the category specified (e.g. either ‘good enough’ or ‘not good enough’). Participants were instructed to press the ‘E’ key for items they did not associate with themselves and from the perfectionism category not targeted in that block.

The first block targeted ‘like me’ and ‘not good enough’ items and the remainder of the blocks alternated between this and ‘like me’ ‘good enough’ (see Figure 2). Faster

responses were expected when two highly associated categories (e.g., ‘like me’ and ‘not good enough’) shared the same response (Greenwald, McGhee & Schwartz, 1998). On each trial the target words were presented in green (maladaptive perfectionism statements) or yellow (self-statements) on a black background. Category labels were presented at the top of the screen in the middle in the corresponding colour (green for ‘maladaptive perfectionism’ and yellow for ‘self’).

Target stimuli remained on the screen until participants responded. Task instructions informed participants that if they hit the wrong key or made a mistake a red ‘X’ would appear in the middle of the screen. They were advised to quickly correct the error and continue with the task. Participants completed two practice blocks with 12 stimuli statements in each and four experimental blocks. Each of the four experimental blocks contained 20 stimuli words (presented in a random order) giving a total of 104 trials. Each statement was presented individually with participants/ asked to respond as quickly as possible. The full task took approximately three minutes to complete.

The response time for statements is indicative of the individual’s automatic associations with the constructs of maladaptive and adaptive perfectionism. The BIAT data was removed for responses quicker than 200ms and longer than three seconds to control for pre-emptive responding and over-consideration respectively. Each individual’s mean response time was calculated and responses for individual items which fell outside 3 S.D. from the mean were excluded from the analysis to control for inattention during the task (Dickson, Gately, & Field, 2013). The BIAT provides a relative index of the strength of the association between maladaptive and adaptive perfectionism, higher scores are indicative of higher maladaptive perfectionism.

Data Analysis

Descriptive and correlational analyses were carried out using SPSS v. 24 (IBM Corporation., Armonk, NY, USA). Structural equation model analysis was conducted using AMOS v. 22 (IBM Corporation., Armonk, NY, USA). We controlled for variables that we thought would have a significant relationship with variables included in the model, namely self-concealment.

Variables were screened for kurtosis with variables that were $-2/+2$ being investigated further (See Appendix O). Only one variable, APS standards, failed to meet this criterion; this variable also failed to meet the criteria for a normal distribution skewness statistics $> \pm 1$; notably (successful) transformation of this variable had no effect on the latent variable and subsequent models fit and regression coefficients.

Firstly, latent variables (perfectionism and self-compassion) needed to be computed as this is more powerful than simply taking mean scores of scales, meaning the SEM was necessary (indeed summing or mean scoring variables fails to take into account error variance erroneously assuming that scores on a question create an observed variable, see Westfall and Yarkoni, 2016). Secondly, due to predicting multiple indirect effects, bootstrapping is the only valid statistical method of analysing indirect effects. Other methods such as commonly used causal steps (e.g. Baron & Kenny, 1986) suffer from increased likelihood of type 2 errors and are unable to identify mediation in models with suppression effects. Furthermore, such methods also incorrectly assume an IV-DV association is required to show mediation. Indeed, it is generally recommended the causal steps approaches to mediation should be avoided (e.g. Krause et al., 1981). Furthermore, other commonly used tests of mediation such as Sobel Z erroneously assumes normally distributed product of coefficients, while asymmetrical confidence intervals for joint significance effects do not give any information on indirect effects and fail to account for covariates in the model.

Before any analysis of the measurement models or the structural model of the data, multiple indices of model fit were calculated to ensure that the model represented a good fit of the data. The X^2 test for model fit was not used, as the standard X^2 test is overly sensitive to kurtosis and distribution. Instead a normed X^2 value was also calculated (X^2/df). X^2/df values between one and five are indicative of an acceptable model fit (Schumacker & Lomax, 2004). In addition the standardised root mean residual (SRMR) absolute fit index was used to assess model fit. This measure is less affected by sample size, distribution and kurtosis values of zero represent perfect fit, and values under 0.08 are representative of a good model fit. Model fit was also estimated using the Normed Fit Index (NFI) as well as the Tucker-Lewis Index (TLI); for both, fit index values above 0.9 are indicative of a good model fit (Ullman, 2001). Finally two noncentrality-based indices were used to evaluate model fit. For the Comparative Fit Index (CFI), values equal to or greater than 0.95 are indicative of good model fit (Hu & Bentler, 1999). The second noncentrality measure of fit was the root mean square error of approximation (RMSEA). RMSEA equal to or lower than 0.06 were used as cut off for good fit (Hu & Bentler, 1999), with values greater than 0.06 but less than 0.08 being described as acceptable (Browne & Cudeck, 1993).

In describing specific relationships within the model, unstandardized regression coefficients are reported with the text. In addition, bias-corrected bootstrapping was utilized to obtain confidence intervals (95% CI) and associated p values for all regression coefficients. Likewise, indirect effects were assessed using bootstrapping to obtain bias corrected confidence intervals (again, bootstrap confidence intervals for indirect effects were 95% CI).

Missing and incomplete data.

Bootstrapping of indirect effects cannot be conducted with missing or estimated data. Bootstrapping was conducted to explore indirect effects throughout. This method mitigates

any issues around skewness and kurtosis. Participants were excluded from the study if they did not complete the self-report measures, and their data was not included in the analysis.

Results

Descriptive Statistics

A total of 89 (54.6% of those who commenced the study) participants completed both the self-report questionnaire and the implicit association task (IAT). Participants had a mean age of 25.65 (s.d. = 7.5), 69 females (77.5%) and 19 males (21.3%). As can be seen in Table 3 the majority of participants were students, who identified their ethnicity as White and who did not consider themselves to be part of a religious group. Mean descriptive statistics for the study variables are shown in Table 3.

Inter-correlations between study variables.

Pearson's correlations were calculated for all study variables (see Appendix P). Rate of alcohol consumption was positively correlated with social ($r = .32, p < .01$), coping ($r = .35, p < .01$), and enhancement ($r = .45, p < .01$) drinking motives. Total self-compassion was negatively associated with maladaptive perfectionism ($r = -.71, p < .01$), coping motives for drinking ($r = -.41, p < .01$), and self-concealment ($r = -.36, p < .01$).

Demographic group differences.

Independent samples t-tests were carried out to identify if there were statistically significant differences between students and non-students, males and females and under 25's and over 25's on key study variables. It was identified that students (see Appendix Q) scored statistically significantly higher than non-students on alcohol consumption ($t(87) = 2.36, p < .05, d = 0.61$), adaptive perfectionism ($t(87) = 3.40, p < .01, d = 0.77$), conformity drinking motives ($t(87) = 3.42, p < .01, d = 0.73$), social drinking motives ($t(87) = 2.57, p < .05, d = 0.63$), maladaptive perfectionism ($t(87) = 2.29, p < .05, d = 0.56$) and self-concealment ($t(87) = 2.63, p < .01, d = 0.66$). While they demonstrated statistically lower scores on total self-

compassion ($t(87) = -2.48, p < .05, d = 0.63$) than non-students. As shown in Table 4 males scored significantly higher than females on total self-compassion ($t(87) = 2.42, p < .05, d = 0.67$). While females scored significantly higher than males on maladaptive perfectionism ($t(87) = -2.19, p < .05, d = 0.56$), and drinking to cope motives ($t(87) = -2.05, p < 0.5, d = 0.56$). There were also statistically significant differences across all main study variables and age group (over 25 vs. under 25).

Table 3

Characteristics of participants who completed all components of the experiment

	Range		Mean (SD)
Age (years)	18-59		25.65 (7.50)
	Male n (%)	Female n (%)	Total n (%)
Student (Total)	19 (21.35)	69 (77.53)	89* (100)
Student	13 (14.61)	55 (61.80)	69 (77.53)
Non-Student	6 (6.74)	14 (15.73)	20 (22.47)
Religious Group (Total)	19 (21.34)	69 (77.53)	89 (100)
part of a religious group	1 (1.12)	17 (19.10)	18 (20.22)
not part of a religious group	15 (16.85)	47 (52.81)	63* (70.79)
Prefer not to say	3 (3.37)	5 (5.62)	8 (8.99)
Ethnic Group (Total)	19 (21.35)	69 (77.53)	89 (100)
White	16 (17.98)	61 (68.54)	78* (87.64)
Mixed/Multiple ethnic groups	2 (2.25)	3 (3.37)	5 (5.62)
Asian/British Asian	1 (1.12)	3 (3.37)	4 (4.49)
Prefer not to say	0 (0)	2 (2.25)	2 (2.25)

* 1 person identified themselves as 'Other' and was included in this group

Table 4**Descriptive statistics for the key study variables for males and females**

Measure	Mean (\pm SD)		
	Male n=19	Female n=69	Total n=88 [†]
APS discrepancy	3.60 (\pm 1.49)	4.42* (\pm 1.45)	4.28 (\pm 1.51)
APS order	4.51 (\pm 1.25)	5.15 (\pm 1.38)	5.01 (\pm 1.36)
APS standards	5.68 (\pm 1.39)	5.84 (\pm 0.94)	5.81 (\pm 1.05)
AUDIT	7.00 (\pm 3.42)	7.01 (\pm 5.05)	7.03 (\pm 4.71)
DMQ conformity	1.57 (\pm 0.61)	1.86 (\pm 0.93)	1.79 (\pm 0.87)
DMQ coping	1.81 (\pm 0.66)	2.22* (\pm 0.80)	2.15 (\pm 0.81)
DMQ enhancement	2.38 (\pm 0.80)	2.72 (\pm 1.06)	2.64 (\pm 1.01)
DMQ social	3.39 (\pm 1.01)	3.51 (\pm 1.02)	3.50 1.01
Mean SC	3.12* (\pm 0.46)	2.75 (\pm 0.63)	2.81 (\pm 0.63)
Self-concealment	28.47 (\pm 11.48)	28.06 (\pm 11.63)	28.90 (\pm 12.17)

[†] 1 individual identified as 'other'

* $p < .05$

Note: APS = Almost Perfect Scale revised scale; AUDIT = Alcohol use disorder identification test; DMQ = Drinking motives questionnaire; SC = Self-compassion scale.

Exploratory Factor Analysis

Exploratory factor analysis was carried out to identify if the items used to measure maladaptive perfectionism (almost perfect scale standards, almost perfect scale order, almost perfect scale discrepancy and IAT-d) were measuring the same underlying construct. A one factor solution (Eigenvalue = 1.92, accounting for 47.90% of variance) was found. All item loadings (0.30-0.85) onto this single factor were statistically significant ($p < .01$), the IAT-d had the lowest correlation with the factor as it was measured using reaction times rather than self-report, however this was still statistically significant ($p < .01$). Based on this maladaptive perfectionism was able to be used as a latent variable within the structural model.

Confirmatory Factor Analysis

Confirmatory factor analysis was used to test the construct validity of the self-compassion construct reported by Neff (2003b). The one-factor structure of self-compassion was confirmed and found to be a good fit on all indices except RMSEA (SRMR = .04, NFI = .95, TFI = .91, CFI = .97, $X^2/df = 2.66$, RMSEA = .14, 90% CI [0.05, 0.23].

Hypothesised Structural Model (see Figure 3.)

Model Fit.

The hypothesised structural model proved to be a good fit for the data on all indices. The two discrepancy function measures found the hypothesised structural model to be a good fit for data ($X^2/df = 1.39$, SRMR = 0.075). The other indices also indicated a good model fit (TFI = 0.94, CFI = 0.96, RMSEA = 0.067, 90% CI [0.02, 0.10] except NFI which was just below the required level (NFI=.86) .The marginal lack of fit for the NFI is most likely related to the (relatively) small sample size.

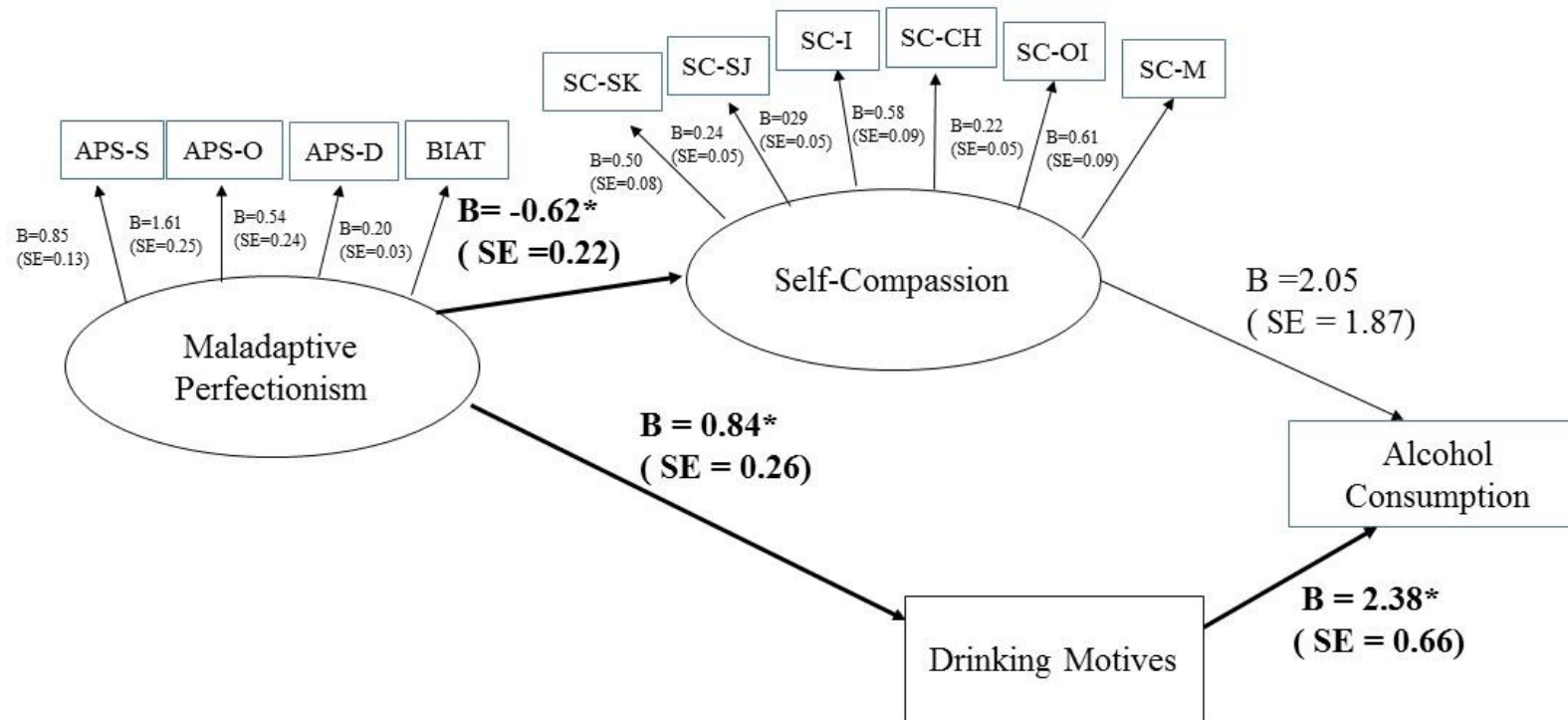


Figure 3. Graphical representation of the hypothesised structural model

Note: APS-S = Almost Perfect Scale revised, standards subscale; APS-O = Almost Perfect Scale revised, order subscale; APS-D = Almost Perfect Scale revised, discrepancy subscale; SC-SK = Self-compassion scale, self-kindness subscale; SC-SJ = Self-compassion scale, self-judgement subscale; Self-compassion scale, isolation subscale; SC-CH = Self-compassion scale, common humanity subscale; SC-OI = Self-compassion scale, over-identification subscale; SC-M = Self-compassion scale, mindfulness subscale; BIAT = Brief implicit association task.

Exploring Hypotheses

As hypothesised it was identified that maladaptive perfectionism predicted drinking to cope (unstandardized regression coefficient, $B=0.84$, $SE = 0.26$, $p = .001$) and drinking to cope was found to predict alcohol consumed ($B=2.38$, $SE = 0.66$, $p < .001$). As hypothesised increased maladaptive perfectionism predicted reduced self-compassion ($B=-0.62$, $SE = .22$, $p=.004$), however there was no significant relationship between self-compassion and alcohol consumed ($B=2.05$, $SE = 1.87$, $p=.274$) in this case.

Simple mediation analysis using PROCESS revealed that after controlling for mediators there is no direct effects of maladaptive perfectionism on AUDIT scores ($B=-.76$, $SE = .54$, $p = .161$, 95% CI $[-1.83, .27]$) although perfectionism had a significant indirect effect through coping motives on AUDIT scores ($B=.64$, $SE = .24$, 95% CI $[.26, 1.26]$). Suggesting that maladaptive perfectionists who drink alcohol to cope with problems are more likely to drink increased amounts of alcohol, i.e. the effect of maladaptive perfectionism on alcohol consumption is fully mediated by drinking to cope.

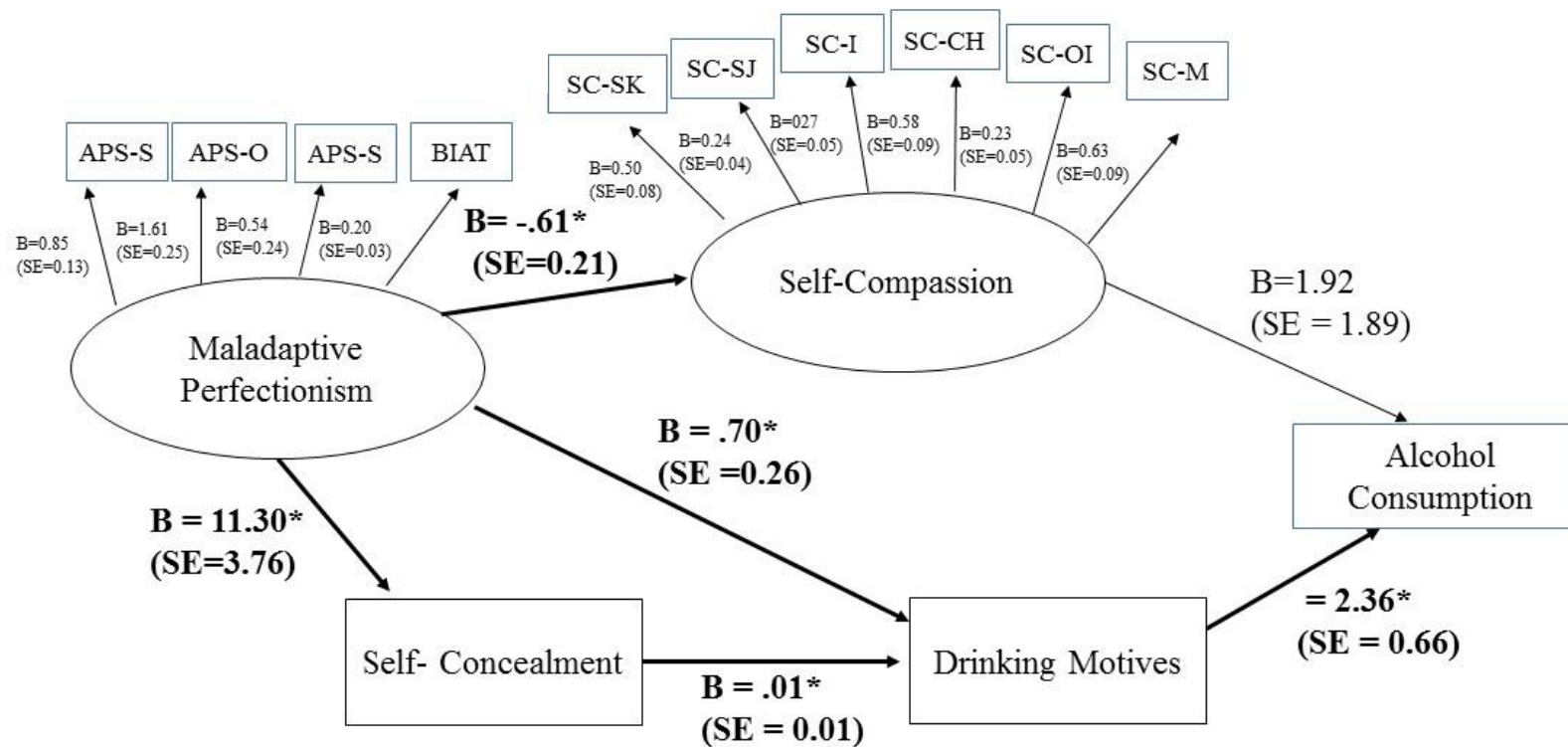


Figure 4. Graphical representation of the exploratory structural model

Note: APS-S = Almost Perfect Scale revised, standards subscale; APS-O = Almost Perfect Scale revised, order subscale; APS-D = Almost Perfect Scale revised, discrepancy subscale; SC-SK = Self-compassion scale, self-kindness subscale; SC-SJ = Self-compassion scale, self-judgement subscale; Self-compassion scale, isolation subscale; SC-CH = Self-compassion scale, common humanity subscale; SC-OI = Self-compassion scale, over-identification subscale, SC-M = Self-compassion scale, mindfulness subscale; BIAT = Brief implicit association task.

Exploratory Structural Model (see Figure 4)

Exploratory analysis was carried out on the data set. Interestingly maladaptive perfectionism was found to predict increased self-concealment ($B=11.30$, $SE=3.76$, $p=.003$) which showed a trend towards predicting increased drinking to cope ($B=.01$, $SE=0.01$, $p = .096$). Further, more detailed, analysis of the indirect effects found in the structural model i.e. those through self-concealment and coping were analysed further using PROCESS. A serial multiple mediation model (see Figure 5) was used to explore the indirect effect of maladaptive perfectionism on AUDIT scores via (1) self-concealment (2) coping (3) self-concealment to coping. After controlling for mediators there was no direct effects of maladaptive perfectionism on AUDIT scores ($B=-.81$, $SE = .55$, $p = .142$, 95% CI $[-1.89, .27]$). There was no significant indirect effect of maladaptive perfectionism on AUDIT scores through self-concealment ($B=.76$, $SE=.13$, 95% CI $[-.13, .36]$). The indirect effect through coping (as described above) was maintained in the model including self-concealment ($B=.42$, $SE = .21$, 95% CI $[.06, .94]$). Finally there was also evidence of serial mediation via self-concealment through coping to AUDIT scores ($B=.20$, $SE= .09$, 95% CI $[.08, .46]$). This finding suggests that maladaptive perfectionists who conceal information from others are more likely to drink alcohol to cope and this results in greater levels of alcohol consumption.

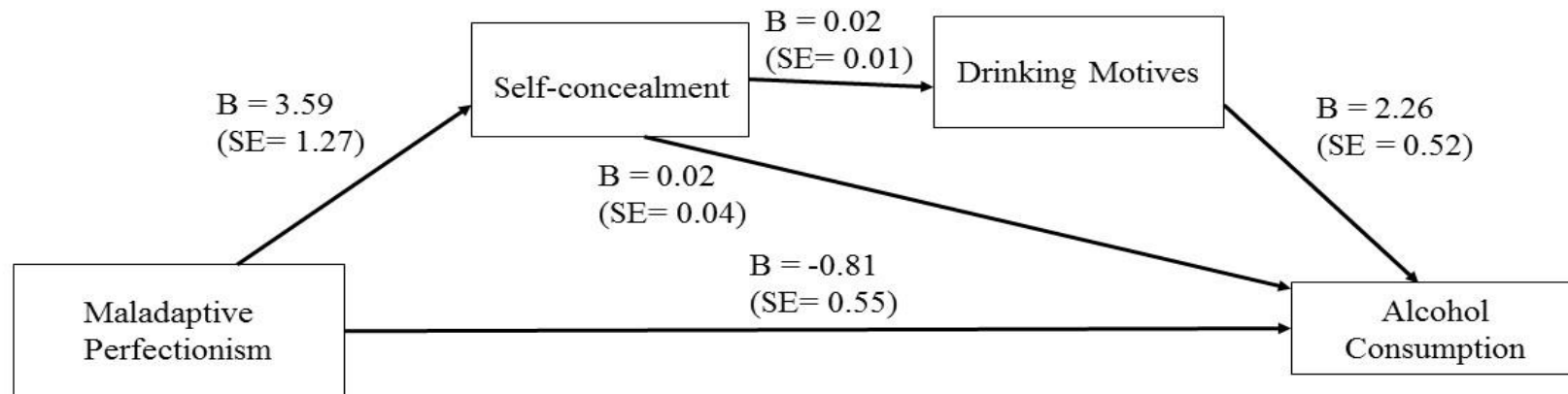


Figure 5. Serial multiple mediation model

Discussion

The aim of the current study was to investigate the relationship between maladaptive perfectionism, self-compassion and drinking behaviour. Participants completed online self-report measures and a brief implicit measure of maladaptive perfectionism. As hypothesised maladaptive perfectionism predicted drinking to cope and this relationship mediated the association between maladaptive perfectionism and alcohol consumption. Unexpectedly, self-compassion did not mediate this relationship. Furthermore exploratory analysis showed an unexpected role of self-concealment. Specifically there was a serial indirect effect of maladaptive perfectionism on alcohol consumption through self-concealment and coping motives.

Maladaptive perfectionism predicting drinking behaviour is consistent with previous research in the area (Rice & Van Arsdale, 2010; Bardone-Cone et al., 2012). In particular Rice and Van Arsdale (2010) identified a similar relationship between maladaptive perfectionism and drinking to cope. The current research replicates this association and shows that this effect is still apparent when using implicit measures of maladaptive perfectionism alongside explicit measures. Notably, previous studies have linked maladaptive perfectionism to stress and negative affect (Rice & Van Arsdale, 2010; Bardone-Cone et al., 2012) indicating that perfectionists may engage in drinking behaviours to cope with negative experiences. Furthermore, studies have established a link between maladaptive perfectionism and hazardous drinking through social disconnection (Sherry et al., 2012). It is argued that individuals who are high in maladaptive perfectionism drink to cope with feelings of isolation and loneliness, and this also results in increased risk of depression. Although these studies did not directly measure drinking to cope, the findings suggest that when maladaptive perfectionists engage in drinking behaviour it is often motivated by attempting to cope with adversity. These findings support the theory that increased drinking to cope motives, leads to

increased risk of drinking proposed by the tension reduction hypothesis (Mohr et al., 2013; Sher, 1987; Conger, 1956).

It is notable that engaging in alcohol use as a coping strategy to manage distress has also been reported in professional samples such as medical practitioners. They are thought to have unrealistic expectations of themselves alongside beliefs that they are not vulnerable to psychological distress (Braquehais et al., 2014). In the absence of alternative coping strategies it has been proposed that this can lead to dependence and other social consequences in this population (Braquehais, Tresidder, & DuPont, 2015). Critically, Hewitt et al. (1998) identified that alcohol dependent individuals who scored highly on maladaptive perfectionism, alongside social hopelessness and depression, were more likely to have attempted suicide. This highlights the risk associated with maladaptive perfectionism and drinking as a coping strategy.

The current study utilised both implicit and explicit measures of perfectionistic cognition (as recommended by Sheeran et al., 2013). Both the self-report measure and implicit measure significantly loaded onto the maladaptive perfectionism factor, showing that the implicit measure of perfectionism taps into the same construction that is measured by the APS-R. Finding implicit measures of perfectionism valid is consistent with previous research (see De Cuyper et al., 2013; Lowden, 2011). However, it is notable that De Cuyper et al. (2013) identified an inverse relationship between the implicit and explicit measure of perfectionism in their study. This is possibly due to the different conceptualisations of perfectionism used in this research. This suggests that further exploration of implicit measures of perfectionism is necessary.

Regarding self-compassion, results of the current study supported previous findings by Mehr and Adams (2016), that individuals scoring high on maladaptive perfectionism were less likely to be self-compassionate in both the hypothesised and exploratory models.

Previous studies have identified that although self-compassion is involved in the mediation of unhealthy perfectionism and distress it does not act independently (James, Verplanken, & Rimes, 2015). This indicates that others variables, such as coping motives, are important mediators of the relationship between maladaptive perfectionism and drinking behaviour.

An exploratory analysis found a possible role for self-concealment in the relationship between maladaptive perfectionism, drinking to cope and drinking behaviour. Self-concealment has been associated with perfectionistic self-presentation which is driven by a need to appear flawless to others and conceal any imperfections (Hewitt et al., 2003). It is thought that perfectionists employ self-concealment to hide their shame, self-hatred, and hopelessness (Flett, Hewitt, & Heisel, 2014). The current findings suggest that individuals with maladaptive perfectionism who engage in avoidant type coping, such as keeping worries from others, are more likely to use alcohol than those who employ more effective coping methods. Previous research has also found that perfectionists often attempt to suppress negative emotions to avoid negative evaluation by others (Rimes & Chadler, 2010). The exploratory findings support this by demonstrating that individuals scoring high in maladaptive perfectionism also attempt to conceal information about themselves or their lives from others through self-concealment. It is thought that the need to conceal mistakes and imperfections can exacerbate and perpetuate stress responses (Flett & Hewitt, 2002). Engaging in this type of coping strategy in the short terms enables maladaptive perfectionists to avoid criticism from others but also can lead to social disconnection (Kawamura & Frost, 2004). As previously stated social disconnection has been found to mediate the relationship between perfectionism and hazardous drinking (Sherry et al., 2012), which predicted depressive symptoms. Thereby increasing maladaptive perfectionists risk of subsequent mental health difficulties as a result.

Limitations

The study employed a cross-sectional sample therefore caution should be employed when interpreting the findings and reading the comments presented in this discussion. The SEM model was developed based on theoretical knowledge and previous research, however despite the findings it is not possible to infer the direction of the effects because of the cross-sectional design of the study (Maxwell & Cole, 2007). In addition to this, as study data were collected online the results may be biased towards individuals who use the internet. Due to the online nature of the task it is also not possible to control for factors such as test environment or internet connection speed. Although recruiting participants via social media allowed a wider demographic to be reached it also resulted in participants commencing the self-report measures on handheld devices. They were unable to complete the implicit task in this way due to software limitations, resulting in high rates of study drop out, despite it being noted on social media advertisements for the study that access to a computer or laptop was required. As a result of these difficulties a number of participants contacted the researcher to enquire if the implicit task could be completed independently to finish the study, however this was not possible because of the study set up. Due to these practical restrictions it is not possible to analyse the data for completers vs. non-completers of the study.

In addition to this the study included a non-clinical sample, therefore limiting the generalisability of results within a clinical population. Despite attempts to include students, non-students and a range of age groups in the sample, the mean age was still quite low (25 years old). The demographic variables were also mainly female students of white British ethnicity, similar to other research carried out in this area. Moreover, as it was completed by mainly students, was advertised on the university website and was shared among university staff it could be argued that this largely academic community is not representative of the

general population regarding rates of maladaptive perfectionism (Rice, Richardson, & Ray, 2016). It is unclear how many of the non-students worked within the academic community.

Clinical/practical implications

Identifying the impact of avoidant coping on drinking behaviour for maladaptive perfectionists has important clinical implications. It highlights the necessity to screen for perfectionistic traits when assessing individuals for intervention for a range of mental health difficulties (e.g. substance misuse, depression, and anxiety). Research has identified that perfectionists attending for intervention do not have as good outcomes as non-perfectionists (Lloyd, Schmidt, Khondoker, & Tchanturia, 2015). These findings could indicate that this is related to maladaptive coping strategies employed by perfectionists such as concealing flaws, or withholding information from their therapist, which may impact on therapy gains, however more research is required in this area to support this.

In addition, it is extremely important that individuals displaying traits of maladaptive perfectionism are informed of the unhelpful effects of concealing information from others, when experiencing difficulties, and the impact of using avoidant methods such as alcohol as a method of coping. Particularly due to the links found between increased avoidance coping, maladaptive perfectionism and hopelessness over time which has been found to result in increased suicidal risk (O'Connor & O'Connor, 2003). Due to the study findings regarding self-concealment, which has been linked with social disconnection (Kawamura & Frost, 2004) it is critical that maladaptive perfectionists are supported to build adaptive coping strategies such as social support networks. This can be done via linking with local groups, online forums or when necessary accessing local services.

Therapeutic interventions should address maladaptive perfectionism alongside other mental health difficulties. This can be done via therapeutic approaches such as cognitive behaviour therapy, which has been identified as an appropriate approach to address

perfectionistic thinking, and associated mental health difficulties (e.g. substance use, depression, anxiety) (McHugh, Kearon, & Otto, 2010; Gilbert, 2009; Kennerley, Kirk, & Westbrook, 2016) although more research is required across clinical groups (Lloyd, et al., 2015). Avoidant coping styles could be addressed via acceptance and commitment therapy (ACT) where clients are supported to develop mindfulness skills to engage in their here and now experiences and to set value based goals (Harris, 2009). ACT proposes that many of the difficulties that arise from emotional dysregulation are not due to experiences people have but from attempts to avoid unwanted experiences (Blackledge & Hayes, 2001). Experiential avoidance has been defined as wanting to get rid of unwanted internal experiences such as certain thoughts, memories or feelings (Harris, 2013). The focus of ACT is to support individuals to develop willingness to take action towards valued goals or things that bring them fulfillment, even when they experience difficult thoughts and feelings (Oliver, Hill, & Morris, 2015). This is thought to reduce additional distress caused by experiential avoidance (Blackledge & Hayes, 2001).

Future directions

According to Cooper (1994) when individuals are motivated to drink via internally motivated factors (i.e. drinking to cope) this is related to personality factors, such as perfectionism, which are generally stable over time. Future research should address this by employing a longitudinal study design to measure the impact of maladaptive perfectionism and drinking to cope across time. Experience sampling method (Hektner, Schmidt, & Csikszentmihalyi, 2007) which allows dynamic and transient variables to be measured in real time could also be used to attempt to measure the relationship between drinking to cope and mood. In addition, given the findings relating to avoidant approaches to coping, it would be helpful to explore the relationship between maladaptive perfectionism, experiential avoidance and drinking to cope. Also given the underlying risk factors that have been linked with

perfectionism and avoidant coping such as hopelessness, future research should incorporate these variables with reference to alcohol use within a clinical population. This is critical when considering evidence demonstrating hopelessness and perfectionism were significant risk factors for suicide attempts among a group of alcoholics (Hewitt, Norton, Flett, Callander, & Cowan, 1998).

The current study identified that self-concealment predicts drinking to cope in maladaptive perfectionists. Due to the social implications of self-concealment it would be helpful if future studies incorporate measures that assess interpersonal aspects of perfectionism such as the Multi-dimensional perfectionism scale (Hewitt & Flett, 1991) or the Perfectionistic self-presentation scale (Hewitt, Flett, & Sherry, 2003).

Conclusion

The current study investigated the relationship between maladaptive perfectionism and alcohol use through self-compassion and drinking motives. The introduction of an implicit measure, alongside explicit measure of maladaptive perfectionism supported previous findings that maladaptive perfectionism predicts drinking alcohol to cope and as a result increased alcohol consumption. Maladaptive perfectionism was negatively associated with self-compassion, but this did not predict alcohol consumption. The research also identified that self-concealment plays a role in maladaptive perfectionists drinking to cope. Due to the co-morbid nature of perfectionism and drinking behaviour it is therefore important that clinicians are aware how to identify perfectionistic tendencies and maladaptive coping strategies and how they can precipitate and perpetuate mental health difficulties.

References

- Adams, C. E., & Leary, M. R. (2007). Promoting self-compassionate attitudes toward eating among restrictive and guilty eaters. *Journal of social and clinical psychology, 26*(10), 1120-1144.
- Albarracin, D., Johnson, B. T., & Zanna, M. P. (2005). *The handbook of attitudes*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Alcohol Concern (2016). Alcohol statistics. Retrieved April 12 2017, from <https://www.alcoholconcern.org.uk/alcohol-statistics>
- Armeli, S., Tennen, H., Todd, M., Carney, M. A., Mohr, C., Affleck, G.,...Hromi, A. (2003). A daily process examination of the stress-response dampening effects of alcohol consumption. *Psychology of addictive behaviors, 17*, 266–276. doi:10.1037/0893-164X.17.4.266
- Babor, T. F., Biddle-Higgins, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *AUDIT: The alcohol use disorders identification test: Guidelines for use in primary health care*. Geneva, Switzerland: World Health Organization.
- Bardone-Cone, A. M., Brownstone, L. M., Higgins, M. K., Harney, M. B., & Fitzsimmons-Craft, E. E. (2012). Predicting difficulties controlling overeating and drinking when experiencing negative affect in undergraduate women. *Journal of social and clinical psychology, 31*(10), 1051-1073.
- Bargh, J.A., & Morsella, E. (2008). The unconscious mind. *Perspectives on Psychological Science, 3*, 73–79.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology, 51*(6), 1173.

- Bentler, P. M., Chou, C. H., (1987). Practical issues in structural modelling. *Sociological Methods & Research*, 16, 78–117.
- Bieling, P. J., Israeli, A. L., & Antony, M. M. (2004). Is perfectionism good, bad, or both? Examining models of the perfectionism construct. *Personality and individual differences*, 36(6), 1373-1385.
- Blackledge, J. T., & Hayes, S. C. (2001). Emotion regulation in acceptance and commitment therapy. *Journal of clinical psychology*, 57(2), 243-255.
- Braquehais, M. D., Tresidder, A., & DuPont, R. L. (2015). Service provision to physicians with mental health and addiction problems. *Current opinion in psychiatry*, 28(4), 324-329.
- Braquehais, M. D., Lusilla, P., Bel, M. J., Navarro, M. C., Nasillo, V., Díaz, A.,...Casas, M. (2014). Dual diagnosis among physicians: A clinical perspective. *Journal of dual diagnosis*, 10(3), 148-155.
- Brooks, M., Kay-Lambkin, F., Bowman, J., & Childs, S. (2012). Self-Compassion amongst clients with problematic alcohol use. *Mindfulness*, 3(4): 308-317.
doi:10.1007/s12671-012-0106-5
- Browne, M. W., & Crudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen, & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.
- Carey, K. B. (1997). Reliability and validity of the time-line follow-back interview among psychiatric outpatients: A preliminary report. *Psychology of addictive behaviors*, 11(1), 26.
- Christiansen, P., & Field, M. (2013). Implicit Cognition. In J. Mackillop, & H. De Wit (Eds.), *The Wiley-Blackwell handbook of addiction psychopharmacology* (pp. 489-514). Chichester: Wiley-Blackwell.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd Edition).

Hillsdale, NJ: Lawrence Earlbaum Associates.

Conger, J. J. (1956). Alcoholism: Theory, problem and challenge: Reinforcement theory and the dynamics of alcoholism. *Quarterly Journal of Studies on Alcohol*, 17, 296 -305.

Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological assessment*, 6(2), 117-128.

Cooper, M. L., Russell, M., Skinner, J. B., & Windle, M. (1992). Development and validation of a three-dimensional measure of drinking motives. *Psychological assessment*, 4, 123-132.

Cramer, K. M., & Barry, J. E. (1999). Psychometric properties and confirmatory factor analysis of the self-concealment scale. *Personality and individual differences*, 27(4), 629-637.

De Cuyper, K., Pieters, G., Claes, L., Vandromme, H., & Hermans, D. (2013). Indirect measurement of perfectionism: Construct and predictive validity. *Journal of social and clinical psychology*, 32, 844–858. doi:10.1521/jscp.2013.32.8.844

Dickson, J. M., Gately, C., & Field, M. (2013). Alcohol dependent patients have weak negative rather than strong positive implicit alcohol associations. *Psychopharmacology*, 228, 603-610.

Dunkley, D. M., Sanislow, C. A., Grilo, C. M., & McGlashan, T. H. (2006). Perfectionism and depressive symptoms 3 years later: Negative social interactions, avoidant coping, and perceived social support as mediators. *Comprehensive psychiatry*, 47, 106–115. <http://dx.doi.org/10.1016/j.comppsy.2005.06.003>

Dunkley, D. M., Blankstein, K. R., Halsall, J., Williams, M., & Winkworth, G. (2000). The relation between perfectionism and distress: Hassles, coping, and perceived social

- support as mediators and moderators. *Journal of counselling psychology*, 47(4), 437-453.
- Egan, S. J., Wade, T. D., & Shafran, R. (2011). Perfectionism as a transdiagnostic process: A clinical review. *Clinical psychology review*, 31(2), 203-212.
- Flett, G.L., & Hewitt, P.L. (2002). Perfectionism and stress processes in psychopathology. In G.L. Flett & P.L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 225-284). Washington, DC: American Psychological Association Publishing.
- Flett, G. L., Hewitt, P. L., & Heisel, M. J. (2014). The destructiveness of perfectionism revisited: Implications for the assessment of suicide risk and the prevention of suicide. *Review of general psychology*, 18(3), 156-172.
- Flett, G. L., Mara, C. A., Hewitt, P. L., Sirois, F., & Molnar, D. S. (2016). How should discrepancy be assessed in perfectionism research? A psychometric analysis and proposed refinement of the almost perfect scale–revised. *Journal of psychoeducational assessment*, 34(7), 718-732.
- Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological science*, 18(3), 233-239.
- Frost, R. O., Turcotte, T. A., Heimberg, R. G., Mattia, J. I., Holt, C. S., & Hope, D. A. (1995). Reactions to mistakes among subjects high and low in perfectionistic concern over mistakes. *Cognitive Therapy and Research*, 19(2), 195-205.
- Germer, C. K., & Neff, K. D. (2013). Self-compassion in clinical practice. *Journal of clinical psychology: In session*, 69(8), 1-12.
- Gilbert, P. (2009). *Overcoming depression: A self-help guide using cognitive behavioural techniques*. London, England: Robinson.
- Gilbert, P. (2013). *The compassionate mind: A new approach to life's challenges* (Rev. ed.). London, UK: Constable.

- Gnilka, P. B., Ashby, J. S., & Noble, C.M. (2012).Multidimensional perfectionism and anxiety: Differences among individuals with perfectionism and tests of a coping-mediation model. *Journal of counselling & development*, 90(4), 427–436.
doi:10.1002/j.1556-6676.2012.00054.x
- Gnilka, P. B., McLaulin, S. E., Ashby, J. S., & Allen, M. C. (2017). Coping resources as mediators of multidimensional perfectionism and burnout. *Consulting psychology journal: Practice and research*, 10, 1-14. doi.10.1037/cpb0000078
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of personality and social psychology*, 74, 1464–1480.
- Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology*, 15(1), 27–33.
- Harris, R. (2009). *ACT made simple: An easy-to-read primer on acceptance and commitment therapy*. Oakland, CA: New Harbinger Publications.
- Harris, R. (2013). *Getting unstuck in ACT: A clinician's guide to overcoming common obstacles in acceptance and commitment therapy*. Oakland CA: New Harbinger Publications.
- Hasking, P., Lyvers, M., & Carlopio, C. (2011). The relationship between coping strategies, alcohol expectancies, drinking motives and drinking behaviour. *Addictive behaviors*, 36(5), 479-487.
- Hektner, J. M., Schmidt, J. A., & Csikszentmihalyi, M. (2007). Experience sampling method: Measuring the quality of everyday life [ebook]. Retrieved from
<https://uk.sagepub.com/en-gb/eur/sage-research-methods>

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts:

Conceptualisation, assessment, and association with psychopathology. *Journal of personality and social psychology*, 60, 456-470. doi:10.1037/0022-3514.60.3.456

Hewitt, P. L., & Flett, G. L., Sherry, S. B. (2003). The interpersonal expression of perfection:

Perfectionistic self-presentation and psychological distress. *Journal of personality and social psychology*, 84, 1303-1325.

Hewitt, P. L., Norton, G. R., Flett, G. L., Callander, L., & Cowan, T. (1998). Dimensions of perfectionism, hopelessness, and attempted suicide in a sample of alcoholics. *Suicide and life-threatening behavior*, 28(4), 395-406.

Hewitt, P. L., Flett, G. L., Sherry, S. B., Habke, M., Parkin, M., Lam, R.W., ...Stein, M.B. (2003). The interpersonal expression of perfection: Perfectionistic self-presentation and psychological distress. *Journal of personality and social psychology*, 84(6), 1303-1325. doi: 10.1037/0022-3514.84.6.1303

Hoepfner, B. B., Stout, R. L., Jackson, K. M., & Barnett, N. P. (2010). How good is fine-grained timeline follow-back data? Comparing 30-day TLFB and repeated 7-day TLFB alcohol consumption reports on the person and daily level. *Addictive behaviors*, 35(12), 1138-1143.

Houben, K., & Wiers, R. W. (2008). Measuring implicit alcohol associations via the internet: validation of web-based implicit association tests. *Behavior research methods*, 40(4), 1134-1143.

Hu, L., & Bentler, P. M. (1999). Cut-off criteria to fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modelling: A multidisciplinary journal*, 6, 1-55. doi: 10.1080/10705519909540118

- James, K., Verplanken, B., & Rimes, K. A. (2015). Self-criticism as a mediator in the relationship between unhealthy perfectionism and distress. *Personality and individual differences, 79*, 123-128.
- Kawamura, K. Y., & Frost, R. O. (2004). Self-concealment as a mediator in the relationship between perfectionism and psychological distress. *Cognitive therapy and research, 28*(2), 183-191.
- Kelly, A. C., Zuroff, D. C., Foa, C. L., & Gilbert, P. (2010). Who benefits from training in self-compassionate self-regulation? A study of smoking reduction. *Journal of social and clinical psychology, 29*(7), 727-755.
- Kennerley, H., Kirk, J., & Westbrook, D. (2016). *An introduction to cognitive behaviour therapy: Skills and applications*. London, England: SAGE.
- Kirsch, P., Esslinger, C., Chen, Q., Mier, D., Lis, S., Siddhanti, S.,...Meyer-Lindenberg, A. (2005). Oxytocin modulates neural circuitry for social cognition and fear in humans. *The journal of neuroscience, 25*(49), 11489-11493. doi: 10.1523/jneurosci.3984-05.2005
- Krause, M, R., Serlin, R, C., Ward, S, E., Rony, R, Y, Z., Ezenwa, M, O., & Naab, F. (1981). Testing Mediation in Nursing Research: Beyond Baron and Kenny. *Nursing Research, 59*, 288-294.
- Kuntsche, E., Kuendig, H., & Gmel, G. (2008). Alcohol outlet density, perceived availability and adolescent alcohol use: A multilevel structural equation model. *Journal of epidemiology and community health, 62*, 811–816.
- Larson, D. G., & Chastain, R .L. (1990). Self-concealment: Conceptualization, measurement, and health implications. *Journal of social and clinical psychology, 9*(4): 439-455.

- Lloyd, S., Schmidt, U., Khondoker, M., & Tchanturia, K. (2015). Can psychological interventions reduce perfectionism? A systematic review and meta-analysis. *Behavioural and cognitive psychotherapy*, 43(06), 705-731.
- Lo, A., & Abbott, M. J. (2013). Review of the theoretical, empirical, and clinical status of adaptive and maladaptive perfectionism. *Behaviour change*, 30(2), 96-116.
- Lowden, R. (2011). *Perfectionism and acceptance: Perspective taking and implicit beliefs*. (Doctoral dissertation). Retrieved from <https://www.era.lib.ed.ac.uk/handle/1842/9799>
- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological methods*, 12(1), 23.
- Mehr, K. E., & Adams, A. C. (2016). Self-compassion as a mediator of maladaptive perfectionism and depressive symptoms in college students. *Journal of college student psychotherapy*, 30(2), 132-145.
- McHugh, R. K., Kearon, B. A., & Otto, M. W. (2010). Cognitive behavioral therapy for substance use disorders. *Psychiatric clinics of North America*, 33(3), 511-525.
- Mitzman, S. F., Slade, P., & Dewey, M. E. (1994). Preliminary development of a questionnaire designed to measure neurotic perfectionism in the eating disorders. *Journal of clinical psychology*, 50(4), 516-522.
- Mohr, C. D., Brannan, D., Wendt, S., Jacobs, L., Wright, R., & Wang, M. (2013). Daily mood-drinking slopes as predictors: A new take on drinking motives and related outcomes. *Psychology of addictive behaviours*, 27(4), 944-955. doi: 10.1037/a0032633

- Molnar, D. S., & Sirois, F. M. (2016). Perfectionism, health, and well-being: Epilogue and future directions. In D. S. Molner & F. M. Sirois (Eds), *Perfectionism, health, and well-being* (pp. 285-302). London, England: Springer International Publishing.
- Neff, K. D. (2003a). The development of a scale to measure self-compassion. *Self and identity*, 2, 223- 250.
- Neff, K.D. (2003b). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and identity*, 2, 85-102.
- Neff, K. (2011). *Self-compassion: Stop beating yourself up and leave insecurity behind*. New York, NY: Harper Collins.
- Neff, K. D., Hsieh, Y., & Dejitterat, K. (2005). Self-compassion, achievement goals and coping with academic failure. *Self and identity*, 4, 263-287.
- Neff, K. D., Kirkpatrick, K. L., & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of research in personality*, 41(1), 139-154.
- O'Connor, R. C. (2007). The relations between perfectionism and suicidality: A systematic review. *Suicide and life-threatening behaviour*, 37: 698–714.
doi:10.1521/suli.2007.37.6.698
- O'Connor, R., & O'Connor, D. B. (2003). Predicting hopelessness and psychological distress: The role of perfectionism and coping. *Journal of counselling psychology*, 50(3), 362-372.
- O'Connor, D., O'Connor, R., & Marshall, R. (2007). Perfectionism and psychological distress: Evidence of the mediating effects of rumination. *European journal of personality*, 21, 429–452. doi:10.1002/per.616
- Oliver, J., Hill, J., & Morris, E. (2015). *ACTivate your life: Using acceptance and mindfulness to build a life that is rich, fulfilling and fun*. Robinson: London.

- Orbell, S., & Sheeran, P. (1998). "Inclined abstainers": A problem for predicting health-related behaviour. *British Journal of Social Psychology*, 37, 151–165.
doi:10.1111/j.2044-8309.1998.tb01162
- Piasecki, T. M., Cooper, M. L., Wood, P. K., Sher, K. J., Shiffman, S., & Heath, A. C. (2014). Dispositional drinking motives: Associations with appraised alcohol effects and alcohol consumption in an ecological momentary assessment investigation. *Psychological assessment*, 26(2), 363-369. doi: 10.1037/a0035153
- Pritchard, M. E., Wilson, G. S., & Yamnitz, B. (2007). What predicts adjustment among college students? A longitudinal panel study. *Journal of American college health*, 56(1), 15-22.
- Reich, R.R., Below, M.C., & Goldman, M.S. (2010). Explicit and implicit measures of expectancy and related alcohol cognitions: A meta-analytic comparison. *Psychology of Addictive Behaviors*, 24, 13–25.
- Rendon, K.P. (2007). *Understanding alcohol use in college students: A study of mindfulness, self-compassion and psychological symptoms*. (Doctoral dissertation). Retrieved from <http://gradworks.umi.com/32/66/3266896.html>
- Rice, K. G., & Ashby, J. S. (2007). An efficient method for classifying perfectionists. *Journal of counseling psychology*, 54(1), 72-85.
- Rice, K. G., & Richardson, C. M. (2014). Classification challenges in perfectionism. *Journal of counseling psychology*, 61(4), 641.
- Rice, K. G., & Van Arsdale, A. C. (2010). Perfectionism, perceived stress, drinking to cope, and alcohol-related problems among college students. *Journal of counselling psychology*, 57(4), 439-450.

- Rice, K. G., Richardson, C. M., & Ray, M. E. (2016). Perfectionism in academic settings. In S. Fuschia, & D. S. Molnar (Eds.), *Perfectionism, health, and well-being* (pp. 245-264). London, England: Springer International Publishing.
- Rice, K. G., Sauer, E. M., Richardson, C. M., Roberts, K. E., & Garrison, A. M. (2015). Perfectionism affects change in psychological symptoms. *Psychotherapy*, 52(2), 218-227.
- Rimes, K. A., & Chalder, T. (2010). The beliefs about emotions scale: Validity, reliability and sensitivity to change. *Journal of psychosomatic research*, 68(3), 285-292.
- Robinson, E., Jones, A., Christiansen, P., & Field, M. (2014). Perceived peer drinking norms and responsible drinking in UK university settings. *Substance use & misuse*, 49(11), 1376-1384. doi:10.3109/10826084.2014.901390
- Roefs, A., Huijding, J., Smulders, F. T., MacLeod, C. M., de Jong, P. J., Wiers, R. W.,...Jansen, A. (2011). Implicit measures of association in psychopathology research. *Psychological bulletin*, 137(1), 149-193.
- Sagar, S. S., & Stoeber, J. (2009). Perfectionism, fear of failure, and affective responses to success and failure: The central role of fear of experiencing shame and embarrassment. *Journal of sport and exercise psychology*, 31(5), 602-627.
- Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modelling* (2nd ed.). Mahwah, NJ: Erlbaum.
- Shafran, R., & Mansell, W. (2001). Perfectionism and psychopathology: A review of research and treatment. *Clinical psychology review*, 21(6), 879-906.
- Sheeran, P., Gollwitzer, P. M., & Bargh, J. A. (2013). Nonconscious processes and health. *Health psychology*, 32(5), 460-473.

- Sher, K. J. (1987). Stress response dampening. In H. T. Blane, & K. E. Leonard (Eds.), *Psychological theories of drinking and alcoholism* (pp. 227-271). New York, NY: Guildford Press.
- Sherry, S. B., Stoeber, J., & Ramasubbu, C. (2016). Perfectionism explains variance in self-defeating behaviors beyond self-criticism: Evidence from a cross-national sample. *Personality and individual differences, 95*, 196-199.
- Sherry, S.B., Hewitt, P.L., Stewart, S.H., Mackinnon, A.L., Mushquash, A.R., Flett, G.L.,...Sherry, D. L. (2012). Social disconnection and hazardous drinking mediate the link between perfectionistic attitudes and depressive symptoms. *Journal of psychopathology and behaviour assessment, 34*, 370-381.
- Sirois, F. M. (2015). Perfectionism and health behaviors: A self-regulation resource perspective. In F. M. Sirois, & D. S. Molnar (Eds.), *Perfectionism, health, and well-being* (pp. 45-67). London, England: Springer International Publishing.
- Sirois, F. M., & Molnar, D. S. (2016). Conceptualizations of perfectionism, health, and well-being: An introductory overview. In F. M. Sirois, & D. S. Molnar (Eds.), *Perfectionism, health, and well-being* (pp. 1-21). London, England: Springer International Publishing.
- Sirois, F. M., Kitner, R., & Hirsch, J. K. (2014). Self-compassion, affect, and health-promoting behaviours. *Health psychology, 34*(6), 661.
- Slade, P. D., & Owens, R. G. (1998). A dual process model of perfectionism based on reinforcement theory. *Behavior modification, 22*, 372–390.
doi:10.1177/01454455980223010
- Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). The revised almost perfect scale. *Measurement and evaluation in counselling and development, 34*, 130–145.

- Sobell, L. C., & Sobell, M. B. (2000). Alcohol timeline followback (TFLB). In A. J. Rush, M. B. First, & D. Blacker (Eds.), *Handbook of psychiatric measures* (pp. 477-479). Boston, MA: American psychiatric association publishing.
- Sobell, L. C., Agrawal, S., Sobell, M.B., Leo, G.I., Young, L.J., Cunningham, J.A.,...Simco, E. R. (2003).Comparison of a quick drinking screen with the timeline follow back for individuals with alcohol problems. *Journal of studies on alcohol*, 64(6), 858–861.
- Sriram, N., & Greenwald, A. G. (2009). The brief implicit association test. *Experimental psychology*, 56(4), 283-294.
- Stacy, A.W., & Wiers, R.W. (2010). Implicit cognition and addiction: A tool for explaining paradoxical behavior. *Annual Review of Clinical Psychology* 6, 551–575.
- Stairs, A. M., Smith, G. T., Zapsolski, T. C., Combs, J. L., & Settles, R. E. (2012). Clarifying the construct of perfectionism. *Assessment*, 19(2), 146-166.
- Stoeber, J., & Hotham, S. (2013). Perfectionism and social desirability: Students report increased perfectionism to create a positive impression. *Personality and individual differences*, 55(5), 626-629.
- Trompetter, H. R., de Kleine, E., & Bohlmeijer, E. T. (2016). Why does positive mental health buffer against psychopathology? An exploratory study on self-compassion as a resilience mechanism and adaptive emotion regulation strategy. *Cognitive therapy and research*, 41(3), 459-468.
- Ullman, J. B. (2001). Structural equation modelling. In B.G. Tabachnick, & L. S. Fidell (Eds.), *Using multivariate statistics* (pp. 653-771). Boston: Allyn & Bacon.
- Westfall, J., & Yarkoni, T. (2016). Statistically controlling for confounding constructs is harder than you think. *PloS one*, 11(3), e0152719.
- Westland, J.C. (2010). Lower bounds on sample size in structural equation modelling. *Electronic commerce research and applications*, 9(6), 476-487.

Wilcox, H. C., Conner, K., & Caine, E. (2004). Risk for suicide associated with drug use disorders: An empirical review. *Drug and alcohol dependence*, 76, 11–19.

Appendix A

Quality Assessment Tool for Studies with Diverse Designs and Scoring Guidance Notes

Criteria	0 = Not at all	1 = Very slightly	2 = Moderately	3 = Complete
Explicit theoretical framework	No mention at all.	Reference to broad theoretical framework.	Reference to a specific theoretical basis.	Explicit statement of theoretical framework and/or constructs applied to the research.
Statement of aims/objectives in main body of report	No mention at all.	General reference to aim/objective at some point in the report including abstract.	Reference to broad aims/objectives in main body of report.	Explicit statement of aims/objectives in main body of report.
Clear description of research setting	No mention at all.	General description of research area and background, e.g. 'in primary care'.	General description of research problem in the target population, e.g. 'among GPs in primary care'.	Specific description of the research problem and target population in the context of the study, e.g. nurses and doctors from GP practices in the east midlands.
Description of procedure for data collection	No mention at all.	Very basic and brief outline of data collection procedure, e.g. 'using a questionnaire distributed to staff'.	States each stage of data collection procedure but with limited detail, or states some stages in details but omits others.	Detailed description of each stage of the data collection procedure, including when, where and how data were gathered.
Rationale for choice of data collection tool (s)	No mention at all.	Very limited explanation for choice of data collection tool.	Basic explanation of rationale for choice of data collection tool, e.g. based on use in a prior similar study.	Detailed explanation of rationale for choice of data collection tool, e.g. relevance to the study aims and assessments of tool quality either statistically, e.g. for

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				reliability & validity, or relevant qualitative assessment.
Detailed recruitment data	No mention at all.	Minimal recruitment data, e.g. no. of questionnaire sent and no. returned.	Some recruitment information but not complete account of the recruitment process, e.g. recruitment figures but no information on strategy used.	Complete data regarding no. approached, no. recruited, attrition data where relevant, method of recruitment.
Strengths and limitations critically discussed	No mention at all.	Very limited mention of strengths and limitations with omissions of many key issues.	Discussion of some of the key strengths and weaknesses of the study but not complete.	Discussion of strengths and limitations of all aspects of study including design, measures, procedure, sample & analysis.
Representative sample of target group of a reasonable size	No statement of target group.	Sample is limited but represents some of the target group or representative but very small.	Sample is somewhat diverse but not entirely representative, e.g. inclusive of all age groups, experience but only one workplace. Requires discussion of target population to determine what sample is required to be representative.	Sample includes individuals to represent a cross section of the target population, considering factors such as experience, age and workplace.
Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)	No mention at all.	Reliability and validity of measurement tool(s) discussed, but not statistically assessed.	Some attempt to assess reliability and validity of measurement tool(s) but insufficient, e.g. attempt to establish test–retest reliability is unsuccessful but no action is taken.	Suitable and thorough statistical assessment of reliability and validity of measurement tool(s) with reference to the quality of evidence as a result of the measures used.
Fit between research question and method of analysis (Quantitative)	No mention at all.	Method of analysis can only address the research question basically or broadly.	Method of analysis can address the research question but there is a more suitable alternative that could have been used or used in addition to offer greater detail.	Method of analysis selected is the most suitable approach to attempt answer the research question in detail.
Evidence of sample size considered in terms of analysis	No mention at all.	Basic explanation for choice of sample size.	Evidence that size of the sample has been considered in study design.	Evidence of consideration of sample size in terms of saturation/information redundancy or to fit generic analytical requirements.

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Evidence of user involvement in design	No mention at all.	Use of pilot study but no involvement in planning stages of study design.	Pilot study with feedback from users informing changes to the design.	Explicit consultation with steering group or statement or formal consultation with users in planning of study design.
Fit between stated research question and format and content of data collection tool e.g. interview schedule (Quantitative)	No research question stated.	Structure and/or content only suitable to address the research question in some aspects or superficially.	Structure & content allows data to be gathered broadly addressing the stated research question(s) but could benefit from greater detail.	Structure and content allows for detailed data to be gathered around all relevant issues required to address the stated research question.
Fit between research question and method of collection (Quantitative)	No mention at all.	Method of data collection can only address some aspects of the research question.	Method of data collection can address the research question but there is a more suitable alternative that could have been used in addition.	Method of data collection selected is the most suitable approach to attempt answer the research question.
Good justification for analytical method selected	No mention at all.	Basic explanation for choice of analytic method.	Fairly detailed explanation of choice of analytic method.	Detailed explanation for choice of analytic method based on nature of research question(s).
Assessment of reliability of analytic process (Qualitative only)	No mention at all.	More than one researcher involved in the analytic process but no further reliability assessment.	Limited attempt to assess reliability e.g. reliance on one method.	Use of a range of methods to assess reliability, e.g. triangulation, multiple researchers, varying research backgrounds.

Appendix B

Author instructions for the Journal of Experimental and Clinical Psychopharmacology®

Only essential information is provided here, for full author guidelines see:

<http://www.apa.org/pubs/journals/pha/?tab=4>

Types of papers:

- original research reports (no word limit, but should typically range between 4,000 and 8,000 words, excluding references)
- brief communications (no more than 3,000 words, excluding references; no more than 2 total figures or tables)
- case reports (no more than 2,000 words, excluding references; only 1 figure or table)
- full reviews of the literature (no word limit)
- brief reviews of the literature (no more than 5,000 words, excluding references)

Experimental and Clinical Psychopharmacology® publishes three types of manuscripts:

- original research reports
- reviews of the literature
- innovations in psychopharmacology

Abstract and Keywords

All manuscripts must include an abstract containing a maximum of 250 words typed on a separate page. After the abstract, please supply up to five keywords or brief phrases.

Manuscript Preparation

Prepare manuscripts according to the Publication Manual of the American Psychological Association (6th edition). Manuscripts may be copyedited for bias-free language (see Chapter 3 of the Publication Manual).

Double-space all copy. Other formatting instructions, as well as instructions on preparing tables, figures, references, metrics, and abstracts, appear in the Manual.

Tables

Use Word's Insert Table function when you create tables. Using spaces or tabs in your table will create problems when the table is typeset and may result in errors.

References

List references in alphabetical order. Each listed reference should be cited in text, and each text citation should be listed in the References section.

Examples of basic reference formats:

- Journal Article:
Hughes, G., Desantis, A., & Waszak, F. (2013). Mechanisms of intentional binding and sensory attenuation: The role of temporal prediction, temporal control, identity prediction, and motor prediction. *Psychological Bulletin*, 139, 133–151.
<http://dx.doi.org/10.1037/a0028566>

- Authored Book:
Rogers, T. T., & McClelland, J. L. (2004). *Semantic cognition: A parallel distributed processing approach*. Cambridge, MA: MIT Press.
- Chapter in an Edited Book:
Gill, M. J., & Sypher, B. D. (2009). Workplace incivility and organizational trust. In P. Lutgen-Sandvik & B. D. Sypher (Eds.), *Destructive organizational communication: Processes, consequences, and constructive ways of organizing* (pp. 53–73). New York, NY: Taylor & Francis.

Figures

Graphics files are welcome if supplied as Tiff or EPS files. Multipanel figures (i.e., figures with parts labeled a, b, c, d, etc.) should be assembled into one file.

The minimum line weight for line art is 0.5 point for optimal printing.

For more information about acceptable resolutions, fonts, sizing, and other figure issues, [please see the general guidelines](#).

When possible, please place symbol legends below the figure instead of to the side.

APA offers authors the option to publish their figures online in color without the costs associated with print publication of color figures.

The same caption will appear on both the online (color) and print (black and white) versions. To ensure that the figure can be understood in both formats, authors should add alternative wording (e.g., "the red (dark gray) bars represent") as needed.

Appendix C

Letter confirming ethical approval, University of Liverpool

Dear Paul,

I am pleased to inform you that IPHS Research Ethics Committee has approved your application for ethical approval. Details and conditions of the approval can be found below.

Ref: IPHS-1415VA-217-Christiansen & Kerr

PI / Supervisor: Paul Christiansen

Title: The mediating effects of self-compassion in the relationship between maladaptive perfectionism and alcohol use.

First Reviewer: Rumona Dickson

Second Reviewer: Matt Field

Date of Approval: 19th may 2015

The application was APPROVED subject to the following conditions:

Conditions

1. All serious adverse events must be reported to the Sub-Committee within 24 hours of their occurrence, via the Research Governance Officer (ethics@liv.ac.uk).
2. This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, IPHS REC should be notified as follows. If it is proposed to make an amendment to the research, you should notify IPHS REC by following the Notice of Amendment procedure outlined at <http://www.liv.ac.uk/researchethics/amendment%20procedure%209-08.doc>.
3. If the named PI / Supervisor leaves the employment of the University during the course of this approval, the approval will lapse. Therefore please contact the Institute's Research Ethics Office at iphsrec@liverpool.ac.uk in order to notify them of a change in PI / Supervisor.

Best Wishes,

Vanessa

Vanessa Adams

IPHS Research Ethics Committee

Email: iphsrec@liv.ac.uk

Appendix D

Study recruitment advertisement



Volunteers required for study

Study title: **Perfectionism and alcohol use**

We are seeking volunteers to take part in an online psychology study which investigates the effects of perfectionism on alcohol use.

Volunteers are invited to complete online questionnaires and a computerised task. It will last approximately 40 minutes.

To take part, you should be a healthy, social drinker, aged above 18 years, and a fluent English speaker.

Unfortunately you cannot take part if you are pregnant, breast feeding or have previously been treated for addiction to alcohol or other substance.

If interested, please contact follow the link to find out more information and take part in the study.

[Enter link here](#)

The University of Liverpool does not condone the excessive use of alcohol.

Appendix E



PARTICIPANT INFORMATION SHEET

Study Title: **Perfectionism and alcohol use**

*You are being invited to take part in a research study. Before you decide whether to participate, it is important that you understand why the research is being done and what it will involve. Please take time to read the following information carefully prior to commencing with the research. If there is anything that is not clear please contact Catherine Kerr at the email address provided below. **We would like to stress that you do not have to accept this invitation and should only agree to take part if you want to.***

Thank you for reading this.

Why is the study being done?

We would like to explore whether or not people consider themselves to be perfectionists and find out if this trait has any impact on their alcohol intake.

Why have I been invited to take part?

We are trying to find 200 volunteers who:

- **Speak fluent English**
- **Are over 18 years of age**
- **Regularly drink alcohol**
- **Living in the UK**

If you meet these criteria, then you are eligible to take part.

Do I have to take part?

You are under no obligation to take part in this study; it is completely your choice. If you do decide to take part, you are free to withdraw at any time and without giving a reason, by closing the browsing window.

What will happen if I take part?

If you agree to take part in the study, you will be asked to consent to show you have agreed to complete the study. We will ask you to complete demographic information, a series of questionnaires and a computerised task lasting a total of approximately 40 minutes. The questionnaires will ask you about alcohol use and other characteristics including self-compassion and perfectionism.

Are there any risks in taking part, or benefits from participation?

There are no anticipated risks to you if you take part in the study.

Although there are no direct benefits from taking part, at the end of the study you will be thoroughly debriefed and this will include information about how alcohol consumption is associated with perfectionism.

Will my participation be kept confidential, and what will happen to the results?

Yes. All information collected will be kept strictly confidential. Participants will not be asked for any identifiable information therefore all data submitted will be completely anonymous. If you wish to submit your email address for inclusion in the competition for a £100 Amazon Voucher this will be kept in a separate database to the study data. Therefore this will not be identifiable with the study data. All the information collected about you during the course of the research will be kept strictly confidential. Any information about you will not be disclosed to anyone. As soon as you have finished the study, all of the information you provide will be identified only by a participant number.

All data completed will be stored on computer file and will be identified by random participant number only. The data will be stored in a password protected file on a computer located on the University campus. All procedures for handling and storing data will comply with the Data Protection Act 1998.

We intend to publish the results from this study in a scientific journal. However, any information which you provide will be stored completely anonymously (with a random number), and you will not be identified in any publication.

What if I change my mind?

You are free to withdraw from the study at any time by closing the viewing browser. You do not have to give a reason. If you do decide to withdraw it is important that you are aware that the only way to remove the data you have submitted until that point is to contact the researcher (Catherine Kerr) on the email address provided detailing the time and date you commenced the study. This is because the data is coded to maintain confidentiality and only identifiable in this way.

What if I am unhappy, or there is a problem?

If you are unhappy at any point in the study, or if there is a problem, please contact the researchers first via email. They will do their best to answer your questions. If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Research Governance Officer at the University, on 0151 794 8290 or via email at ethics@liv.ac.uk.

T

What if I want advice about drinking, or help with reducing my drinking?

We are not qualified to offer advice ourselves, but if you are concerned about your drinking, and would like help giving up, we advise you to seek information and advice from your Doctor, by calling Drinkline on 0800 917 82 82, or from one of the following websites:

www.downyourdrink.org.uk
www.drinkaware.co.uk/

Who can I contact if I have further questions?

If you require any further information or wish to discuss any aspect of this study, please contact me by email at Catherine.kerr@liverpool.ac.uk.

Thank you very much for taking an interest in this research.

Appendix F

CONSENT FORM

Title of Research Project:
Perfectionism and alcohol use

Researcher(s): Miss Catherine Kerr

**Please
initial box**

1. I confirm that I have read and have understood the information sheet dated May 2015 for the above study. ☐
2. I understand that in order to take part in the study, I should be a fluent English speaker aged 18 years or above and a regular drinker. ☐
3. I understand that if I agree to take part, I will be asked to complete questionnaires, complete a computerised task and answer questions online. ☐
4. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected. ☐
5. I understand that my responses will be assigned a code which will not be identifiable. ☐
6. I confirm that I am currently not pregnant or breast feeding. ☐
7. I confirm that I have never been advised to stop drinking by a health care professional. ☐
8. I agree to take part in the above study. ☐

The contact details of the Principal Investigator are:

Dr Paul Christiansen,
School of Psychology, University of Liverpool, Liverpool, L69 7ZA
Telephone: 0151 794 6959
Email: prc@liverpool.ac.uk

Appendix G



Participant Debriefing Information

Title of Research Project: **Perfectionism and Alcohol use**

Thank You for your help!

We appreciate the time you have given to contribute to this study. The study will contribute to our knowledge about perfectionism and alcohol use.

Research has suggested that perfectionistic behaviours can be “healthy” and “unhealthy”, with healthy perfectionism being associated with increased well-being. Healthy perfectionism is thought to be motivated by reward goals (e.g. to achieve something) while unhealthy perfectionism is thought to be motivated by avoidance goals (e.g. to avoid criticism from others).

Previous research has indicated that individuals who score higher in unhealthy perfectionism are more likely to employ avoidance based coping strategies including alcohol use. Self-compassion involves employing a warm and accepting attitude towards the self. It has been suggested that self-compassion promotes more adaptive functioning and it has been identified as a helpful intervention for individuals with alcohol difficulties. It is therefore expected that individuals classed as unhealthy perfectionists based on the ‘Almost perfect scale’ and the computerised tasks are less likely to drink alcohol as a way of coping with problems if they score higher in self-compassion.

The aim is explore the usefulness of introducing compassion focused interventions for people with unhealthy perfectionism tendencies who wish to decrease alcohol intake. If you would like more information on self-compassion you can visit <http://self-compassion.org/>

If you wish to be entered into a prize draw for a chance to win an Amazon voucher worth £100, please enter your email address into the box below (if you do not wish to be entered into the draw, please leave the box blank):

NOTE: The data that you have submitted as part of the questionnaire will be stored separately from this email address, so any personal information you have given us will not be identifiable via this email address.

The draw will take place once the study has closed, and you will be informed whether you have been successful or not via the email address above.

We hope that there has been nothing upsetting about taking part. However, we would like to remind you that should if any of the questions raised concerns you are advised to contact your GP for support, and/or discuss them with someone you trust.

You can also gain support by contacting an independent support organisation such as The Samaritans: 08457 90 90 90 or www.samaritans.org

We are not qualified to offer advice ourselves, but if you are concerned about your drinking, and would like help giving up, we advise you to seek information and advice from your Doctor, by calling Drinkline on 0800 917 82 82, or Alcohol Helpline (www.addictionhelper.com) CALL 0800 138 7155 / 0203 131 6327

OR TEXT "HELP" to 66777

Or alternatively, the following websites may be useful to you:

www.drinkaware.co.uk

www.downyourdrink.org.uk

www.nhs.uk/Livewell/alcohol/pages/alcoholsupport.aspx

If you have any questions about the research or would like any further information please contact the researcher:

Catherine Kerr, Trainee Clinical Psychologist, Doctorate of Clinical Psychology Programme, University of Liverpool
Email: Catherine.kerr@liverpool.ac.uk

Or alternatively you can contact the principal investigator:

Dr Paul Christiansen,
School of Psychology, University of Liverpool, Liverpool, L69 7ZA
Telephone: 0151 794 6959 Email: prc@liverpool.ac.uk

Appendix H

Almost Perfect Scale-Revised

Instructions

The following items are designed to measure attitudes people have towards themselves, their performance, and towards others. There are no right or wrong answers. Please respond to all the items. Use your first impression and do not spend too much time on individual items in responding.

Respond to each of the items using the scale below to describe your degree of agreement with each item. Fill in the appropriate number circle on the computer screen.

Strongly Disagree (1) Disagree (2) Slightly Disagree (3) Neutral (4) Slightly Agree (5)
Agree (6) Strongly Agree (7)

1. I have high standards for my performance at work or at school.
2. I am an orderly person.
3. I often feel frustrated because I can't meet my goals.
4. Neatness is important to me.
5. If you don't expect much out of yourself, you will never succeed.
6. My best just never seems to be good enough for me.
7. I think things should be put away in their place
8. I have high expectations for myself.
9. I rarely live up to my high standards.
10. I like to always be organized and disciplined.
11. Doing my best never seems to be enough.
12. I set very high standards for myself.
13. I am never satisfied with my accomplishments.
14. I expect the best from myself.
15. I often worry about not measuring up to my own expectations.
16. My performance rarely measures up to my standards.
17. I am not satisfied even when I know I have done my best.
18. I try to do my best at everything I do.
19. I am seldom able to meet my own high standards of performance.
20. I am hardly ever satisfied with my performance.
21. I hardly ever feel that what I've done is good enough.

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22. I have a strong need to strive for excellence.

23. I often feel disappointment after completing a task because I know I could have done better.

(Slaney, Mobley, Trippi, Ashby, & Johnson, 1996)

Appendix I

Drinking Motives Questionnaire (Adult Version)

Response Options (original form):

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

Instructions

Here is a list of reasons people give for drinking alcoholic beverages. Using the response categories below, please indicate how often you drink for each of the following reasons. There are no right or wrong answers to these questions. We just want to know about the reasons why you usually drink when you do.

Social Motives

1. How often do you drink as a way to celebrate?
2. How often do you drink because it is what most of your friends do when you get together?
3. How often do you drink to be sociable?
4. How often do you drink because it is customary on special occasions?
5. How often do you drink because it makes a social gathering more enjoyable?

Coping Motives

1. How often do you drink to relax?
2. How often do you drink to forget your worries?
3. How often do you drink because you feel more self-confident or sure of yourself?
4. How often do you drink because it helps when you feel depressed or nervous?
5. How often do you drink to cheer up when you're in a bad mood?

Enhancement Motives

1. How often do you drink because you like the feeling?
2. How often do you drink because it is exciting?
3. How often do you drink to get high?
4. How often do you drink because it's fun?
5. How often do you drink because it makes you feel good?

Conformity Motives

1. How often do you drink because your friends pressure you to drink?
2. How often do you drink so that others won't kid you about not drinking?
3. How often would you say you drink to fit in with a group you like?
4. How often do you drink to be liked?
5. How often do you drink so you won't feel left out?

Appendix J

Self-Compassion Scale (Neff, 2003)

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

- | Almost
never | | | | | Almost
always |
|-----------------|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | |
| _____ | | | | | 1. I'm disapproving and judgmental about my own flaws and inadequacies. |
| _____ | | | | | 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong. |
| _____ | | | | | 3. When things are going badly for me, I see the difficulties as part of life that everyone goes through. |
| _____ | | | | | 4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world. |
| _____ | | | | | 5. I try to be loving towards myself when I'm feeling emotional pain. |
| _____ | | | | | 6. When I fail at something important to me I become consumed by feelings of inadequacy. |
| _____ | | | | | 7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am. |
| _____ | | | | | 8. When times are really difficult, I tend to be tough on myself. |
| _____ | | | | | 9. When something upsets me I try to keep my emotions in balance. |
| _____ | | | | | 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people. |
| _____ | | | | | 11. I'm intolerant and impatient towards those aspects of my personality I don't like. |
| _____ | | | | | 12. When I'm going through a very hard time, I give myself the caring and tenderness I need. |
| _____ | | | | | 13. When I'm feeling down, I tend to feel like most other people are probably happier than I am. |
| _____ | | | | | 14. When something painful happens I try to take a balanced view of the situation. |
| _____ | | | | | 15. I try to see my failings as part of the human condition. |
| _____ | | | | | 16. When I see aspects of myself that I don't like, I get down on myself. |
| _____ | | | | | 17. When I fail at something important to me I try to keep things in perspective. |
| _____ | | | | | 18. When I'm really struggling, I tend to feel like other people must be having an |

easier time of it.

- _____ 19. I'm kind to myself when I'm experiencing suffering.
- _____ 20. When something upsets me I get carried away with my feelings.
- _____ 21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.
- _____ 22. When I'm feeling down I try to approach my feelings with curiosity and openness.
- _____ 23. I'm tolerant of my own flaws and inadequacies.
- _____ 24. When something painful happens I tend to blow the incident out of proportion.
- _____ 25. When I fail at something that's important to me, I tend to feel alone in my failure.
- _____ 26. I try to be understanding and patient towards those aspects of my personality I don't like.

Appendix K

self-concealment scale (scs)

<i>This scale measures self-concealment, defined here as a tendency to conceal from others personal information that one perceives as distressing or negative. Please tick the box, to the right of each of the following 10 statements, that best describes how much you personally agree or disagree with the statement.</i>						
		<i>1=strongly disagree</i>	<i>2=moderately disagree</i>	<i>3=don't disagree or agree</i>	<i>4=moderately agree</i>	<i>5=strongly agree</i>
1.	I have an important secret that I haven't shared with anyone					
2.	if I shared all my secrets with my friends, they'd like me less					
3.	there are lots of things about me that I keep to myself					
4.	some of my secrets have really tormented me					
5.	when something bad happens to me, I tend to keep it to myself					
6.	I'm often afraid I'll reveal something I don't want to					
7.	telling a secret often backfires and I wish I hadn't told it					
8.	I have a secret that is so private I would lie if anybody asked me about it					
9.	my secrets are too embarrassing to share with others					
10.	I have negative thoughts about myself that I never share with anyone					

total score =

In the initial development research for the Self-Concealment Scale, the average score for a group of 306 adults (average age 42, 82% with US college education) was 26, with about 70% scoring between 19 and 33 (Larson and Chastain 1990). A high tendency to conceal was associated with increased physical and psychological illness, even after allowing for the presence or absence of past trauma.

Larson, D. G. and R. L. Chastain (1990). "Self-Concealment: Conceptualization, Measurement, and Health Implications." *Journal of Social and Clinical Psychology* 9(4): 439-455.

This article introduces the construct of self-concealment, the active concealment from others and personal information that one perceives as negative or distressing. A Self-Concealment Scale (SCS) was developed and was included in a questionnaire battery completed by 306 subjects. The SCS had excellent psychometric properties. Self-concealment was conceptually and empirically distinguished from self-disclosure. Self-concealment significantly correlated with self-report measures of anxiety, depression, and bodily symptoms and accounted for a significant incremental percentage of the variance in physical and psychological symptoms even after controlling for occurrence of trauma, trauma distress, disclosure of the trauma, social support, social network, and self-disclosure. The implications of these findings are discussed and directions for further research are briefly outlined.

Appendix L

AUDIT

Questions	Scoring system					Your score
	0	1	2	3	4	
How often do you have a drink containing alcohol?	Never	Monthly or less	2 - 4 times per month	2 - 3 times per week	4+ times per week	
How many units of alcohol do you drink on a typical day when you are drinking?	1 - 2	3 - 4	5 - 6	7 - 9	10+	
How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you failed to do what was normally expected from you because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you needed an alcoholic drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
Have you or somebody else been injured as a result of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested that you cut down?	No		Yes, but not in the last year		Yes, during the last year	
Scoring: 0 – 7 Lower risk, 8 – 15 Increasing risk, 16 – 19 Higher risk, 20+ Possible dependence					TOTAL	

Appendix M

Time Line Follow Back

To help to get an idea about you drinking please give us an indication of alcohol consumption in the past 14 days.

Please fill out the table with the number of units of alcohol consumed on each day, being as accurate as possible.

Please use the information provided below to work out how many units you consumed on each day in the past fortnight and fill in the number of units in the table. On days when you did not drink please write 0 (zero).

I realise it isn't easy to recall things with 100% accuracy, but if you are not sure how many units you drank on a certain day please try to give it your best guess.

What is a unit of alcohol?

The list below shows the number of units of alcohol in common drinks:

A pint of lager (normal)/bitter (e.g. Carling, Fosters, Boddingtons, John Smith)	2 UNITS
A pint of lager (strong)/best bitter (e.g. Stella Artois, Kronenburg, 1664, Fullers ESB)	3 UNITS
A pint of cider (ordinary strengths, e.g. Woodpecker)	2 UNITS
A pint of cider (strong e.g. Dry Blackthorne, Strongbow)	3 UNITS
A glass of red or white wine (175ml)	2 UNITS
A bottle of wine (750 ml)	9 UNITS
A pub measure of spirit (25ml)	1 UNIT
A pub measure of spirit (Northern Ireland, 35ml)	1.4 UNITS
An alcopop (e.g. Smirnoff Ice, Bacardi Breezer)	1.5 UNITS

Please now fill in the table stating the total number of alcohol units you consumed for each day. Please start from whichever day it was yesterday and work backwards. For example if it is Monday start from Sunday and work backwards.

Please double check that you have filled in the number of units for all fourteen days.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Units Week 1							
Units Week 2							

Total

Appendix N**BIAT Test categories**

Self		Maladaptive perfectionism	
Like me	Not like me	Good enough	Not good enough
Me	You	Meeting standards	Could do better
Self	Other	Adequate	Inadequate
I	They	Doing well	Always failing
Myself	Them	Self-accepting	Self-critical

Appendix O**Skewness and Kurtosis output for study variables**

Descriptive Statistics						
	N	Mean	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
AUDIT_Score	89	.49884	.818	.255	.584	.506
SCOMPS_SK	89	.08188	-.140	.255	.026	.506
SCOMPS_SJ	89	.08503	-.202	.255	.467	.506
SCOMPS_CH	89	.08393	.003	.255	-.245	.506
SCOMPS_I	89	.10065	.056	.255	-.516	.506
SCOMPS_M	89	.09463	-.106	.255	-.311	.506
SCOMPS_OI	89	.09855	.056	.255	-.538	.506
meanSCOMP	89	.06639	.043	.255	-.669	.506
APS_STANDARDS	89	.11078	-1.439	.255	3.775	.506
APS_ORDER	89	.14462	-.692	.255	.660	.506
APS_DISCREP	89	.15998	.107	.255	-.929	.506
PANAS_NEG	89	.93957	.800	.255	-.122	.506
PANAS_POS	89	.91566	-.533	.255	-.410	.506
SELF_CONCEAL	89	1.29014	.042	.255	-1.292	.506
iatd	89	.0482736018	.480	.255	-.292	.506
DMQ_coping	89	.08540	.436	.255	-.600	.506
Valid N (listwise)	89					

Appendix P Means, Standard Deviations, and Correlations for key study variables

	<i>M</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
1. AUDIT	7.03	4.71	-									
2. Self-compassion	2.81	0.63	0.02	-								
3. APS-Standards	5.81	1.05	0.11	-0.26*	-							
4. APS. Order	5.01	1.36	-0.02	-0.23*	0.58**	-						
5. APS Discrepancy	4.28	1.51	0.06	0.71**	0.42**	0.29**	-					
6. DMQ Social	3.50	1.01	0.32**	-0.15	0.28**	0.19	0.31**	-				
7. DMQ Coping	2.15	0.81	0.35**	-0.41**	0.19	0.18	0.45**	0.57**	-			
8. DMQ Enhancement	2.64	1.01	0.45**	0.03	0.17	0.13	0.08	0.62**	0.52**	-		
9. DMQ Conformity	1.79	0.87	0.18	-0.13	0.15	0.20	0.24*	0.35**	0.33**	0.16	-	
10. Self-Concealment	28.90	12.17	0.20	-0.36**	0.25*	0.14	0.38**	0.33**	0.38**	0.18	0.47**	-

Appendix Q**Descriptive statistics for the key study variables for students vs. non-students/over 25's vs. under 25's.**

Measure	Mean (\pm SD)			
	≥ 25 n = 37	< 25 n = 52	Students n = 69	Non-students n = 20
APS discrepancy	3.85 (± 1.60)	4.58* (± 1.37)	4.47* (± 1.43)	3.61 (± 1.63)
APS order	4.59 (± 1.42)	5.31* (± 1.25)	5.15 (± 1.27)	4.52 (± 1.59)
APS standards	5.32 (± 1.21)	6.16* (± 0.74)	6.00* (± 0.88)	5.15 (± 1.30)
AUDIT	5.14 (± 4.12)	8.38* (± 4.67)	7.65 (± 4.65)	4.90 (± 4.36)
DMQ conformity	1.45 (± 0.65)	2.03* (± 0.94)	1.91* (± 0.92)	1.36 (± 0.53)
DMQ coping	1.86 (± 0.77)	2.36* (± 0.77)	2.23 (± 0.79)	1.90 (± 0.81)
DMQ enhancement	2.31 (± 0.89)	2.88* (± 1.04)	2.74 (± 1.04)	2.28 (± 0.87)
DMQ social	3.09 (± 0.98)	3.79* (± 0.94)	3.64* (± 0.96)	3.00 (± 1.06)
Mean SC	2.99* (± 0.59)	2.69 (± 0.63)	2.73 (± 0.61)	3.11* (± 0.60)
SC common humanity	2.86 (± 0.67)	2.80 (± 0.87)	2.84 (± 0.83)	2.76 (± 0.66)
SC isolation	2.95 (± 0.94)	3.29 (± 0.94)	3.27* (± 0.90)	2.73 (± 1.00)
SC mindfulness	3.31 (± 0.92)	3.06 (± 0.87)	3.07 (± 0.83)	3.49 (± 1.03)
SC over-identification	2.95 (± 0.95)	3.56* (± 0.84)	3.46* (± 2.76)	2.76 (± 1.06)
SC self-judgement	3.06 (± 0.78)	3.39 (± 0.80)	3.34 (± 0.75)	2.97 (± 0.92)
SC self-kindness	2.70 (± 0.73)	2.51 (± 0.80)	2.51 (± 0.74)	2.86 (± 0.83)
Self-concealment	23.19 (± 11.63)	32.96* (± 10.94)	30.67* (± 11.71)	22.80 (± 12.04)

*p< .05

Note: APS = Almost Perfect Scale revised scale; AUDIT = Alcohol use disorder identification test; DMQ = Drinking motives questionnaire; SC = Self-compassion scale.